

# 2-Phase Stepping Motors

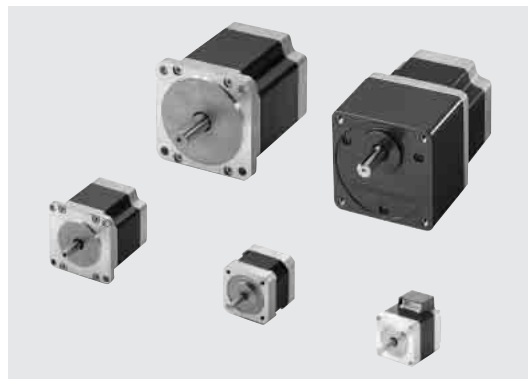
### Additional Information

- Technical Reference .....F-1
- General Information .....G-1

Introduction	Closed Loop <i>Q572P</i>		Motor & Driver Packages		5-Phase Full/Half		2-Phase Full/Half		2-Phase Stepping Motors		Driver with Indexer		Controllers		Low-Speed Synchronous Motors		Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	DC Input	5-Phase Microstep	DC Input	AC Input	DC Input	without Encoder	with Encoder	UI2120G	EMP401	EMP402	SG8030J	SMK			
				AC Input	RK	DC Input	DC Input	AC Input	PK/PV	PK								

## 2-Phase Stepping Motors

Six frame sizes are available in a range from 1.10 in. (28 mm) to 3.35 in. (85 mm). In addition to the standard type, we offer high torque type, **PV** Series (high inertia capability), high-resolution type and **SH** geared type. The motor windings also come in various specifications.



### Wide Variety

Series/Type	Size	Motor Frame Size: in. (mm)					
		1.10 in. (28 mm)	1.38 in. (35 mm)	1.65 in. (42 mm)	2.22 in. (56.4 mm) <sup>*1</sup>	2.65 in. (60 mm)	3.35 in. (85 mm) <sup>*2</sup>
<b>PK</b> Series	Standard Type	—	—	 Page C-202	 Page C-214 with Encoder page → C-233	—	 Page C-227
	High Torque Type	 Page C-196	 Page C-200	 Page C-204	—	—	—
	High Resolution Type	—	—	 Page C-208	 Page C-218 with Encoder page → C-239	—	—
	<b>SH</b> Geared Type	 Page C-198	—	 Page C-212	 Page C-222 <sup>*1</sup>	—	 Page C-231 <sup>*2</sup>
<b>PV</b> Series (High Inertia Capability)	—	—	—	—	 Page C-224	—	

<sup>\*1</sup> Gearhead frame size is 2.65 in. sq. (60 mm sq.)

<sup>\*2</sup> Gearhead frame size is 3.54 in. sq. (90 mm sq.)

# Accessories (Sold Separately)

**Motor Mounting Brackets**  
Page → C-291



Mounting brackets cannot be used with **SH** geared types.

**Clean Dampers**  
Page → C-289

Effective at suppressing motor vibration and improving performance.



**Flexible Couplings**  
Page → C-284

**MC** Motor Couplings



**Flexible Couplings**  
Page → C-286

**MCL** Gearmotor Couplings

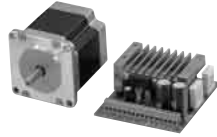


## 2-Phase Stepping Motor and Driver Packages

To achieve maximum performance, motors with dedicated drivers are available.



AC Input  
**UMK** Series  
→Page C-149



DC Input  
**CSK** Series  
→Page C-161

## 2-Phase Stepping Motor Driver with Built-in Indexer **UI2120G**

Combines a high performance stepping motor driver with microprocessor intelligence and an integrated pulse generator.



→Page C-241

Introduction	Motor & Driver Packages						2-Phase Stepping Motors		Driver	Controllers		Low-Speed Synchronous Motors	Accessories	Before Using a Stepping Motor	
AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK
AC Input	DC Input	5-Phase Microstep AC Input	DC Input	DC Input	DC Input	AC Input	DC Input	DC Input	Without Encoder	With Encoder	with Indexer				
Closed Loop <i>Q57ZP</i>															

## PK Series

### Standard Type

The standard **PK Series** 2-phase stepping motor offers balanced performance enhanced by high torque, low vibration and low noise. Optimal motor size and winding specification can be selected from a wide range of motor variations.

#### With Encoder

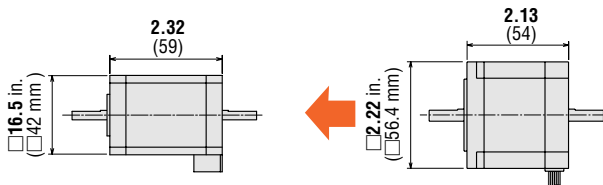
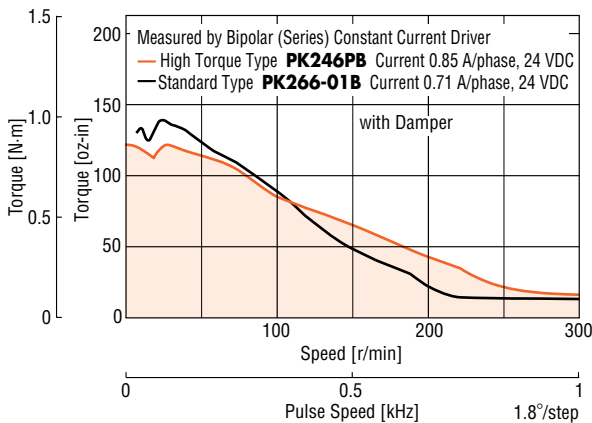
The **PK Series** 2-phase stepping motor with encoder offers high torque and precise feedback capability.

- Encoder Feedback Type: Incremental
- Two feedback resolutions: 200 and 400 pulses/rev.
- Provides closed loop system capability

### High Torque Type

This motor type combines high torque and a compact size. Three frame sizes, 1.10 in. (28 mm), 1.38 in. (35 mm) and 1.65 in. (42 mm), are available. Each specification provides torque equivalent to a motor of the next larger frame size, supporting high-torque operation even in the high-speed range.

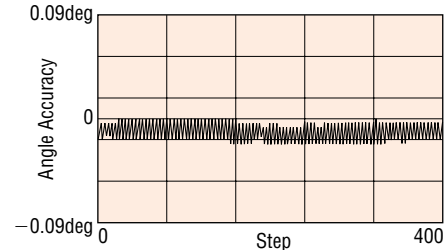
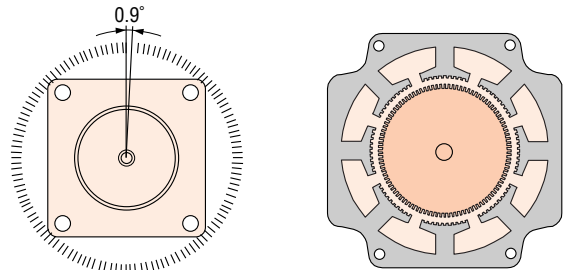
For example, high torque type **PK246PB** [motor frame size 1.65 in. (42 mm)] has the same holding torque as the standard type **PK266-01B** [motor frame size 2.22 in. (56.4 mm)]. This means a smaller size motor will maintain the same torque. This allows for downsized and lightweight equipment.



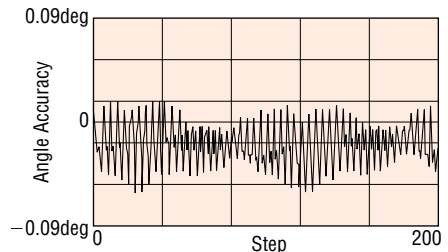
High Torque Type	Type Model	Standard Type
<b>PK246PB</b>		<b>PK266-01B</b>
132 oz-in (0.93 N·m)	<b>Holding Torque</b>	166 oz-in (1.17 N·m)
0.77 oz-in <sup>2</sup> (114×10 <sup>-7</sup> kg·m <sup>2</sup> )	<b>Rotor Inertia</b>	1.64 oz-in <sup>2</sup> (300×10 <sup>-7</sup> kg·m <sup>2</sup> )

### High Resolution Type

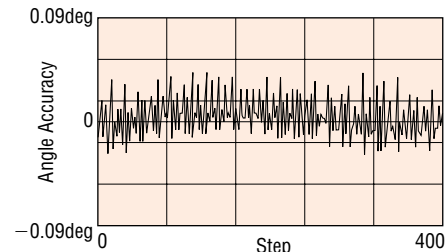
These 2-phase, high resolution stepping motors have half the step angle of standard stepping motors. The high resolution type increases motor resolution from 200 steps/revolution to 400 steps/revolution. Smaller step-angles can be achieved by half-step driving or microstep driving. Such options, however, do not improve accuracy. Other than having twice as many rotor teeth as standard stepping motors, all other structures are exactly the same as the standard motors.



(1) High Resolution Type (0.9°/Step)



(2) Standard Type (1.8°/Step)



(3) Standard Type (0.9°/Step)

Angle Accuracy

## SH Geared Type

Incorporating **SH** gears with high permissible torque, these models offer the full benefit of the speed reducing capability of geared motors, delivering high resolution, high torque and smooth low-speed rotation. With performance like this, the **SH** Geared type can easily satisfy the requirements of various kinds of low-speed positioning applications.

### ● Smooth Rotation at Low Speeds

Stepping motors at low speed produce a relatively high amount of vibration. Use of a gearhead allows for an increase in the speed of the motor which results in a smoother motion while maintaining the low output speed required by the application.

### ● Six Gear Ratios

**SH** geared motors are available with six different gear ratios: 3.6:1, 7.2:1, 9:1, 10:1, 18:1, 36:1. The low ratios of these gearheads can greatly facilitate speed control of the 2-phase stepping motors.

\* **PK223-SG** type is not available in a gear ratio of 3.6:1.

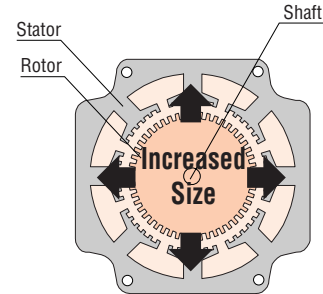
### ● Ideal for High Inertia Drive

The stepping motor itself can drive an inertia of 10 times the rotor inertia. The geared type can reduce the load inertia by the square of the gear ratio. Therefore, the geared type is suitable for driving larger inertial loads.

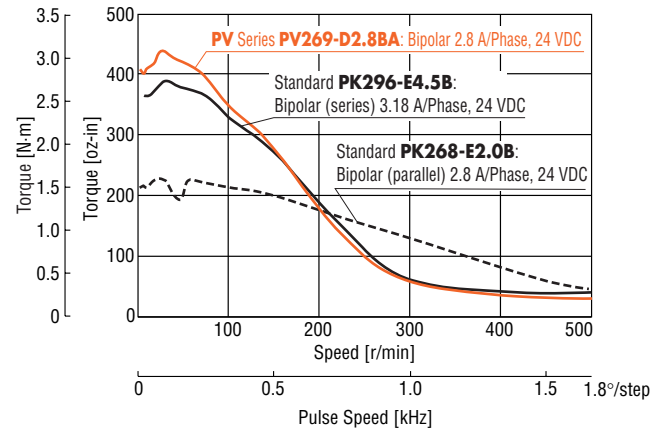
## PV Series

### High Inertia Capability

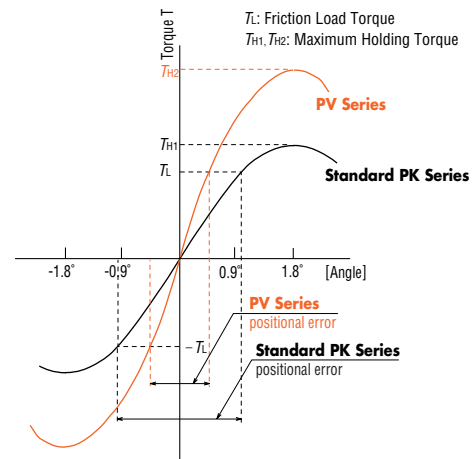
The **PV** Series provides, on average, 1.5 times higher torque than a standard stepping motor. By utilizing a larger rotor diameter, larger magnets can be used to significantly increase the output torque.



Motor structure  
(Cross section perpendicular to shaft)



### Angle-Torque Characteristics



All equipment has a friction load, and the motor stops when the motor output torque and friction load torque are balanced. As shown in the characteristics above, the larger the output torque per step angle, the less the motor is influenced by the friction load, so positioning accuracy is improved. Stop positioning displacement by external force does not occur as often.

Introduction

AS

AS PLUS

ASC

RK

CRK II

CSK

PMC

UMK

CSK

PK/PV

PK

U12120G

EMP401

EMP402

SG8030J

SMK

Accessories

Before Using a Stepping Motor

Driver with Indeter

Encoder without Encoder

Encoder with Encoder

2-Phase Stepping Motors

5-Phase Full/Half

5-Phase Full/Half

5-Phase Microstep

Closed Loop

AC Input

DC Input

DC Input

DC Input

DC Input

DC Input

DC Input

DC Input

DC Input

DC Input

DC Input

DC Input

DC Input

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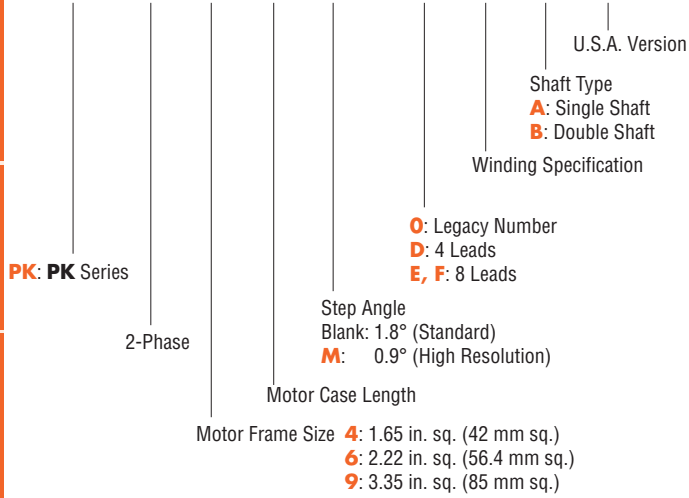
DC Input

Product Number Code

PK Series

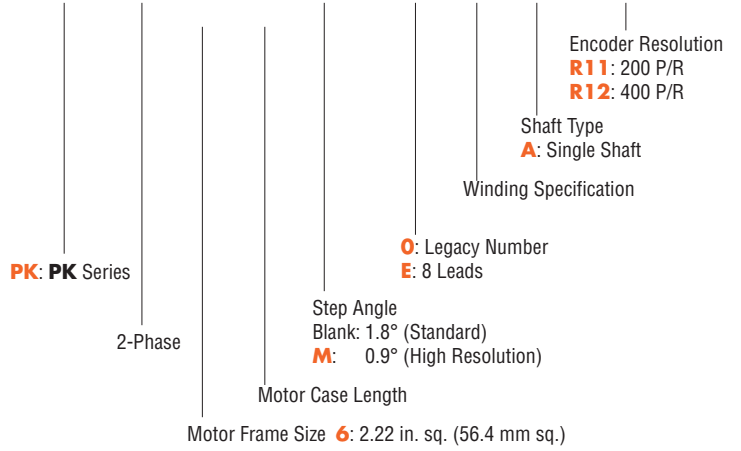
Standard Type, High Resolution Type

**PK 2 4 3** □ - **0 1 B A**



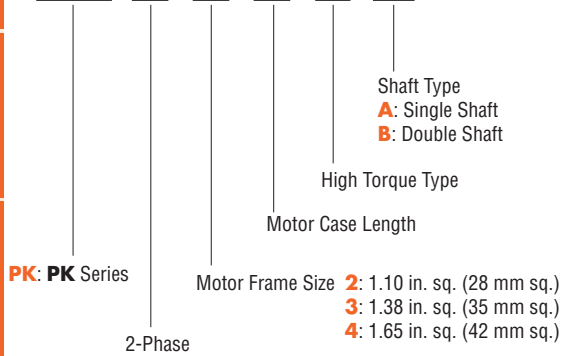
Standard Type, High Resolution Type with Encoder

**PK 2 6 6** □ - **0 1 A R11**



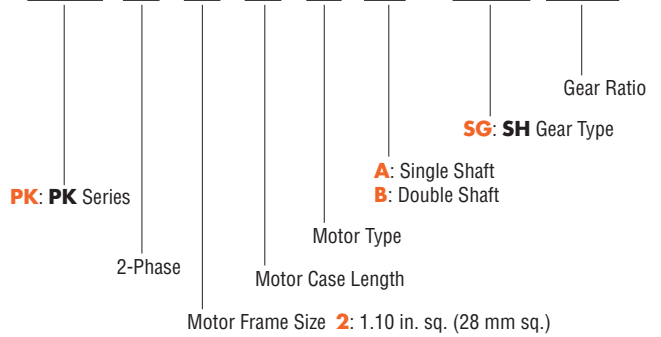
High Torque Type

**PK 2 3 3 P A**



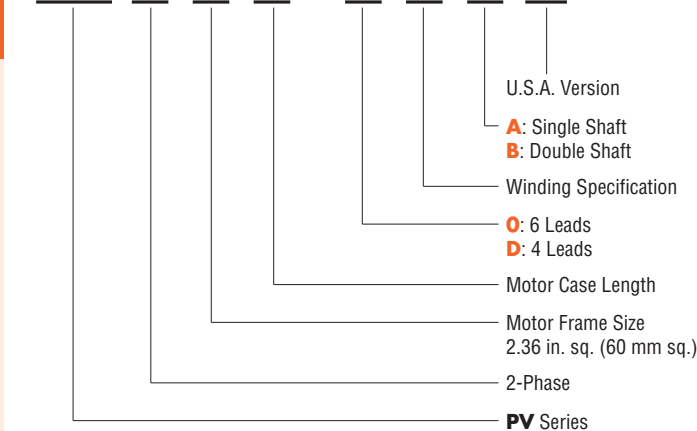
SH Geared Type

**PK 2 2 3 P A - SG 10**

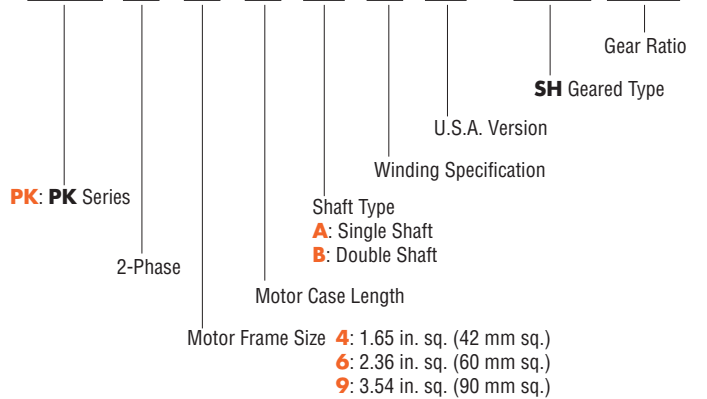


PV Series (High Inertia Capability)

**PV 2 6 6 - 0 2 B A**

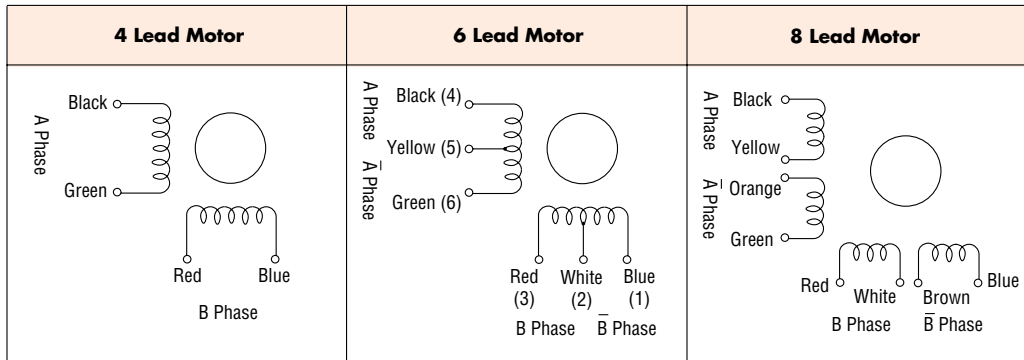


**PK 2 6 4 A 1 A - SG 10**

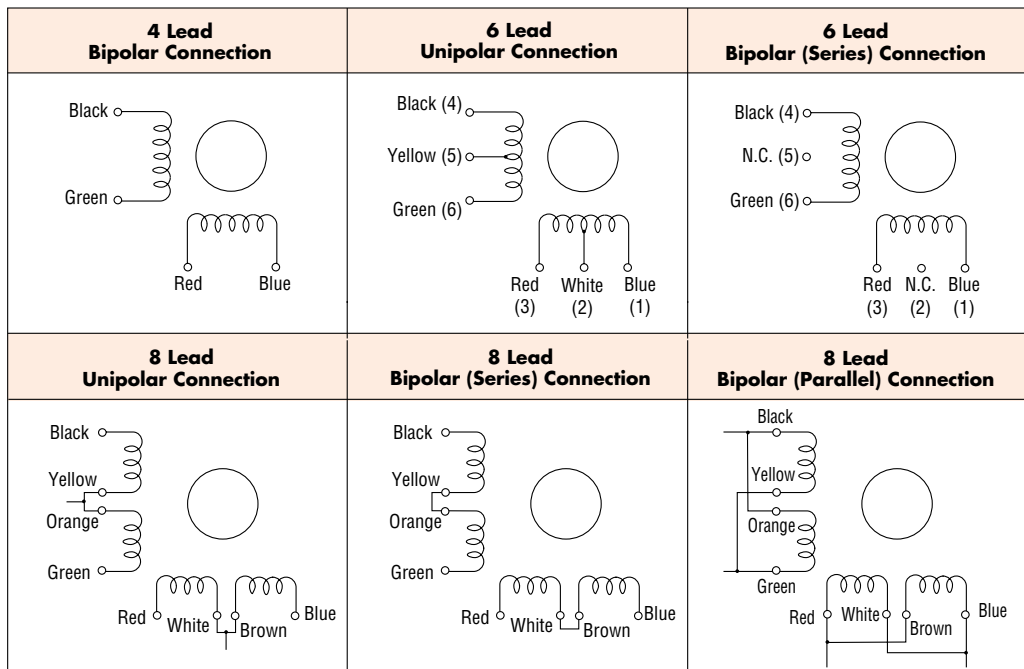


## ■ Connection Diagrams

### ● Motor Wiring Diagrams



### ● Wire Connection Diagrams



- The numbers inside the parentheses indicate the connector pin No. of the high torque type motor.
- N.C.: No Connection

## ■ Notes on the Speed–Torque Characteristics Diagrams

The speed-torque characteristics featured in this catalog are as measured with a constant-current driver or a constant-voltage driver. The actual characteristics will vary depending on the driver used. Please use these diagrams only for reference purposes when selecting a motor. You should also conduct a thorough evaluation with the actual driver to be used.

Introduction	AS	AS PLUS	ASC	RK	CRKII	CSK	PMC	UMK	CSK	PK/PV	PK	Driver with Indexer	Controllers	Low-Speed Synchronous Motors	Accessories	Before Using a Stepping Motor
	Closed Loop	5-Phase Microstep	5-Phase Full/Half	2-Phase Full/Half	2-Phase Stepping Motors without Encoder	2-Phase Stepping Motors with Encoder				UN2120G	EMP401	EMP402	SG8030J	SMK		

## Product Specifications

### Motor Frame Size: 1.10 in. (28 mm) PK22

Type	Model Single Shaft Double Shaft	Basic Step Angle	Connection Type	Holding Torque		Current per Phase A/phase	Voltage VDC	Resistance $\Omega$ /phase	Inductance mH/phase	Rotor Inertia		Page
				oz-in	N-m					oz-in <sup>2</sup>	kg-m <sup>2</sup>	
High Torque Type	<b>PK223PA</b>	1.8°	Bipolar (Series)	9.2	0.065	0.67	3.8	5.6	4	0.049	$9 \times 10^{-7}$	C-196
	<b>PK223PB</b>		Unipolar	7.1	0.05	0.95	2.66	2.8	1			
	<b>PK224PA</b>	1.8°	Bipolar (Series)	13.7	0.097	0.67	4.6	6.8	4.8	0.066	$12 \times 10^{-7}$	
	<b>PK224PB</b>		Unipolar	10.6	0.075	0.95	3.2	3.4	1.2			
	<b>PK225PA</b>	1.8°	Bipolar (Series)	15.6	0.11	0.67	6.2	9.2	5.6	0.098	$18 \times 10^{-7}$	
	<b>PK225PB</b>		Unipolar	12.7	0.09	0.95	4.4	4.6	1.4			
SH Geared Type	<b>PK223PA-SG7.2</b>	0.25°	Bipolar (Series)	42	0.3	0.67	3.8	5.6	4	0.049	$9 \times 10^{-7}$	C-198
	<b>PK223PB-SG7.2</b>		Unipolar			0.95	2.66	2.8	1			
	<b>PK223PA-SG9</b>	0.2°	Bipolar (Series)	42	0.3	0.67	3.8	5.6	4			
	<b>PK223PB-SG9</b>		Unipolar			0.95	2.66	2.8	1			
	<b>PK223PA-SG10</b>	0.18°	Bipolar (Series)	42	0.3	0.67	3.8	5.6	4			
	<b>PK223PB-SG10</b>		Unipolar			0.95	2.66	2.8	1			
	<b>PK223PA-SG18</b>	0.1°	Bipolar (Series)	56	0.4	0.67	3.8	5.6	4			
	<b>PK223PB-SG18</b>		Unipolar			0.95	2.66	2.8	1			
	<b>PK223PA-SG36</b>	0.05°	Bipolar (Series)	56	0.4	0.67	3.8	5.6	4			
	<b>PK223PB-SG36</b>		Unipolar			0.95	2.66	2.8	1			

• The value given for holding torque is the value when operated with rated voltage and 2-phase excitation.

### Motor Frame Size: 1.38 in. (35 mm) PK23

Type	Model Single Shaft Double Shaft	Basic Step Angle	Connection Type	Holding Torque		Current per Phase A/phase	Voltage VDC	Resistance $\Omega$ /phase	Inductance mH/phase	Rotor Inertia		Page
				oz-in	N-m					oz-in <sup>2</sup>	kg-m <sup>2</sup>	
High Torque Type	<b>PK233PA</b>	1.8°	Bipolar (Series)	28	0.2	0.85	4.6	5.4	5.6	0.131	$24 \times 10^{-7}$	C-200
	<b>PK233PB</b>		Unipolar	22	0.16	1.2	3.24	2.7	1.4			
	<b>PK235PA</b>	1.8°	Bipolar (Series)	52	0.37	0.85	5.8	6.8	8	0.27	$50 \times 10^{-7}$	
	<b>PK235PB</b>		Unipolar	42	0.3	1.2	4.08	3.4	2			

• The value given for holding torque is the value when operated with rated voltage and 2-phase excitation.

### Motor Frame Size: 1.65 in. (42 mm) PK24

Type	Model Single Shaft Double Shaft	Basic Step Angle	Connection Type	Holding Torque		Current per Phase A/phase	Voltage VDC	Resistance $\Omega$ /phase	Inductance mH/phase	Rotor Inertia		Page
				oz-in	N-m					oz-in <sup>2</sup>	kg-m <sup>2</sup>	
Standard Type	<b>PK243-01AA</b>	1.8°	Bipolar (Series)	28	0.2	0.67	5.6	8.4	10	0.191	$35 \times 10^{-7}$	C-204
	<b>PK243-01BA</b>		Unipolar	22	0.16	0.95	4	4.2	2.5			
	<b>PK243-02AA</b>		Bipolar (Series)	28	0.2	0.28	13	48	60			
	<b>PK243-02BA</b>		Unipolar	22	0.16	0.4	9.6	24	15			
	<b>PK243-03AA</b>		Bipolar (Series)	28	0.2	0.22	17	77	84			
	<b>PK243-03BA</b>		Unipolar	22	0.16	0.31	12	38.5	21			
	<b>PK244-01AA</b>		Bipolar (Series)	46	0.33	0.85	5.6	6.6	12.8			
	<b>PK244-01BA</b>		Unipolar	36	0.26	1.2	4	3.3	3.2			
	<b>PK244-02AA</b>		Bipolar (Series)	46	0.33	0.57	8.6	15	26.8			
	<b>PK244-02BA</b>		Unipolar	36	0.26	0.8	6	7.5	6.7			
	<b>PK244-03AA</b>		Bipolar (Series)	46	0.33	0.28	17	60	120			
	<b>PK244-03BA</b>		Unipolar	36	0.26	0.4	12	30	30			
	<b>PK244-04AA</b>		Bipolar (Series)	46	0.33	0.14	34	240	428			
	<b>PK244-04BA</b>		Unipolar	36	0.26	0.2	24	120	107			
	<b>PK245-01AA</b>		Bipolar (Series)	61	0.43	0.85	5.6	6.6	11.2			
	<b>PK245-01BA</b>		Unipolar	45	0.32	1.2	4	3.3	2.6			
	<b>PK245-02AA</b>		Bipolar (Series)	61	0.43	0.57	8.6	15	28.4			
	<b>PK245-02BA</b>		Unipolar	45	0.32	0.8	6	7.5	7.1			
	<b>PK245-03AA</b>		Bipolar (Series)	61	0.43	0.28	17	60	100			
	<b>PK245-03BA</b>		Unipolar	45	0.32	0.4	12	30	25			

• The value given for holding torque is the value when operated with rated voltage and 2-phase excitation.



## Motor Frame Size: □1.65 in. (□42 mm) PK24□

Type	Model Single Shaft Double Shaft	Basic Step Angle	Connection Type	Holding Torque		Current per Phase A/phase	Voltage VDC	Resistance Ω/phase	Inductance mH/phase	Rotor Inertia		Page
				oz-in	N-m					oz-in <sup>2</sup>	kg-m <sup>2</sup>	
High Torque Type	<b>PK244PA</b>	1.8°	Bipolar (Series)	68	0.48	0.85	6.8	8	15.6	0.31	57×10 <sup>-7</sup>	C-202
	<b>PK244PB</b>		Unipolar	55	0.39	1.2	4.8	4	3.9			
	<b>PK246PA</b>		Bipolar (Series)	132	0.93	0.85	10	12	26	0.62	114×10 <sup>-7</sup>	
	<b>PK246PB</b>		Unipolar	106	0.75	1.2	7.2	6	6.5			
High Resolution Type	<b>PK243M-01AA</b>	0.9°	Bipolar (Series)	28	0.2	0.67	5.6	8.4	15.2	0.191	35×10 <sup>-7</sup>	C-208
	<b>PK243M-01BA</b>		Unipolar	22	0.16	0.95	4	4.2	3.8			
	<b>PK243M-02AA</b>		Bipolar (Series)	28	0.2	0.42	8.4	20	38.8			
	<b>PK243M-02BA</b>		Unipolar	22	0.16	0.6	6	10	9.7			
	<b>PK243M-03AA</b>		Bipolar (Series)	28	0.2	0.22	17	77	136			
	<b>PK243M-03BA</b>		Unipolar	22	0.16	0.31	12	38.5	34			
	<b>PK244M-01AA</b>		Bipolar (Series)	44	0.31	0.85	5.6	6.6	17.2	0.3	54×10 <sup>-7</sup>	
	<b>PK244M-01BA</b>		Unipolar	36	0.26	1.2	4	3.3	4.3			
	<b>PK244M-02AA</b>		Bipolar (Series)	44	0.31	0.57	8.6	15	38.8			
	<b>PK244M-02BA</b>		Unipolar	36	0.26	0.8	6	7.5	9.7			
	<b>PK244M-03AA</b>		Bipolar (Series)	44	0.31	0.28	17	60	152			
	<b>PK244M-03BA</b>		Unipolar	36	0.26	0.4	12	30	38			
	<b>PK245M-01AA</b>		Bipolar (Series)	53	0.38	0.85	5.6	6.6	15.6	0.37	68×10 <sup>-7</sup>	
	<b>PK245M-01BA</b>		Unipolar	45	0.32	1.2	4	3.3	3.9			
	<b>PK245M-02AA</b>		Bipolar (Series)	53	0.38	0.57	8.6	15	39.6			
	<b>PK245M-02BA</b>		Unipolar	45	0.32	0.8	6	7.5	9.9			
	<b>PK245M-03AA</b>		Bipolar (Series)	53	0.38	0.28	17	60	128			
	<b>PK245M-03BA</b>		Unipolar	45	0.32	0.4	12	30	32			

• The value given for holding torque is the value when operated with rated voltage and 2-phase excitation.

## Motor Frame Size: □1.65 in. (□42 mm) PK243

Type	Model Single Shaft Double Shaft	Basic Step Angle	Connection Type	Holding Torque		Current per Phase A/phase	Voltage VDC	Resistance Ω/phase	Inductance mH/phase	Rotor Inertia		Page		
				lb-in	N-m					oz-in <sup>2</sup>	kg-m <sup>2</sup>			
SH Geared Type	<b>PK243A1A-SG3.6</b>	0.5°	Bipolar (Series)	1.77	0.2	0.67	5.6	8.4	10	0.191	35×10 <sup>-7</sup>	C-212		
	<b>PK243B1A-SG3.6</b>		Unipolar			0.95	4.0	4.2	2.5					
	<b>PK243A1A-SG7.2</b>	0.25°	Bipolar (Series)	3.5	0.4	0.67	5.6	8.4	10					
	<b>PK243B1A-SG7.2</b>		Unipolar			0.95	4.0	4.2	2.5					
	<b>PK243A1A-SG9</b>	0.2°	Bipolar (Series)	4.4	0.5	0.67	5.6	8.4	10					
	<b>PK243B1A-SG9</b>		Unipolar			0.95	4.0	4.2	2.5					
	<b>PK243A1A-SG10</b>	0.18°	Bipolar (Series)	4.9	0.56	0.67	5.6	8.4	10					
	<b>PK243B1A-SG10</b>		Unipolar			0.95	4.0	4.2	2.5					
	<b>PK243A1A-SG18</b>	0.1°	Bipolar (Series)	7.0	0.8	0.67	5.6	8.4	10					
	<b>PK243B1A-SG18</b>		Unipolar			0.95	4.0	4.2	2.5					
	<b>PK243A1A-SG36</b>	0.05°	Bipolar (Series)	7.0	0.8	0.67	5.6	8.4	10					
	<b>PK243B1A-SG36</b>		Unipolar			0.95	4.0	4.2	2.5					
	<b>PK243A2A-SG3.6</b>	0.5°	Bipolar (Series)	1.77	0.2	0.28	13	48	60				0.191	35×10 <sup>-7</sup>
	<b>PK243B2A-SG3.6</b>		Unipolar			0.4	9.6	24	15					
	<b>PK243A2A-SG7.2</b>	0.25°	Bipolar (Series)	3.5	0.4	0.28	13	48	60					
	<b>PK243B2A-SG7.2</b>		Unipolar			0.4	9.6	24	15					
	<b>PK243A2A-SG9</b>	0.2°	Bipolar (Series)	4.4	0.5	0.28	13	48	60					
	<b>PK243B2A-SG9</b>		Unipolar			0.4	9.6	24	15					
	<b>PK243A2A-SG10</b>	0.18°	Bipolar (Series)	4.9	0.56	0.28	13	48	60					
	<b>PK243B2A-SG10</b>		Unipolar			0.4	9.6	24	15					
	<b>PK243A2A-SG18</b>	0.1°	Bipolar (Series)	7.0	0.8	0.28	13	48	60					
	<b>PK243B2A-SG18</b>		Unipolar			0.4	9.6	24	15					
	<b>PK243A2A-SG36</b>	0.05°	Bipolar (Series)	7.0	0.8	0.28	13	48	60					
	<b>PK243B2A-SG36</b>		Unipolar			0.4	9.6	24	15					

• The value given for holding torque is the value when operated with rated voltage and 2-phase excitation.

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Motor Frame Size:  2.22 in. ( 56.4 mm) **PK26**

Type	Model Single Shaft Double Shaft	Basic Step Angle	Connection Type	Holding Torque		Current per Phase A/phase	Voltage VDC	Resistance $\Omega$ /phase	Inductance mH/phase	Rotor Inertia		Page
				oz-in	N-m					oz-in <sup>2</sup>	kg-m <sup>2</sup>	
Standard Type	<b>PK264-01A</b>	1.8°	Bipolar (Series)	68	0.48	0.71	8.1	11.4	21.6	0.66	$120 \times 10^{-7}$	C-214
	<b>PK264-01B</b>		Unipolar	55	0.39	1	5.7	5.7	5.4			
	<b>PK264-02A</b>		Bipolar (Series)	68	0.48	1.4	3.9	2.8	5.6			
	<b>PK264-02B</b>		Unipolar	55	0.39	2	2.8	1.4	1.4			
	<b>PK264-03A</b>		Bipolar (Series)	68	0.48	2.1	2.6	1.26	2.4			
	<b>PK264-03B</b>		Unipolar	55	0.39	3	1.9	0.63	0.6			
	<b>PK264-E2.0A</b>		Bipolar (Parallel)	68	0.48	2.8	1.96	0.7	1.4			
	<b>PK264-E2.0B</b>		Bipolar (Series)	68	0.48	1.4	3.9	2.8	5.6			
	<b>PK266-01A</b>		Bipolar (Series)	166	1.17	0.71	11	14.8	40			
	<b>PK266-01B</b>		Unipolar	127	0.9	1	7.4	7.4	10			
	<b>PK266-02A</b>		Bipolar (Series)	166	1.17	1.4	5	3.6	10			
	<b>PK266-02B</b>		Unipolar	127	0.9	2	3.6	1.8	2.5			
	<b>PK266-03A</b>		Bipolar (Series)	166	1.17	2.1	3.2	1.5	4.4			
	<b>PK266-03B</b>		Unipolar	127	0.9	3	2.3	0.75	1.1			
	<b>PK266-E2.0A</b>		Bipolar (Parallel)	166	1.17	2.8	2.52	0.9	2.5			
	<b>PK266-E2.0B</b>		Bipolar (Series)	166	1.17	1.4	5	3.6	10			
	<b>PK268-01A</b>		Bipolar (Series)	248	1.75	0.71	12	17.2	56			
	<b>PK268-01B</b>		Unipolar	191	1.35	1	8.6	8.6	14			
	<b>PK268-02A</b>		Bipolar (Series)	248	1.75	1.4	6.3	4.5	14.4			
	<b>PK268-02B</b>		Unipolar	191	1.35	2	4.5	2.25	3.6			
	<b>PK268-03A</b>		Bipolar (Series)	248	1.75	2.1	4.2	2	6.4			
	<b>PK268-03B</b>		Unipolar	191	1.35	3	3	1	1.6			
	<b>PK268-E2.0A</b>		Bipolar (Parallel)	240	1.75	2.8	3.16	1.13	3.6			
	<b>PK268-E2.0B</b>		Bipolar (Series)	240	1.75	1.4	6.3	4.5	14.4			
<b>PK268-E2.0B</b>	Unipolar	191	1.35	2	4.5	2.25	3.6					
Standard Type with Encoder	<b>PK264-01AR11</b>	1.8°	Bipolar (Series)	68	0.48	0.71	8.1	11.4	21.6	0.66	$120 \times 10^{-7}$	C-233
	<b>PK264-01AR12</b>		Unipolar	55	0.39	1	5.7	5.7	5.4			
	<b>PK264-02AR11</b>		Bipolar (Series)	68	0.48	1.4	3.9	2.8	5.6			
	<b>PK264-02AR12</b>		Unipolar	55	0.39	2	2.8	1.4	1.4			
	<b>PK264-03AR11</b>		Bipolar (Series)	68	0.48	2.1	2.6	1.26	2.4			
	<b>PK264-03AR12</b>		Unipolar	55	0.39	3	1.9	0.63	0.6			
	<b>PK264-E2.0AR11</b>		Bipolar (Parallel)	68	0.48	2.8	1.96	0.7	1.4			
	<b>PK264-E2.0AR12</b>		Bipolar (Series)	68	0.48	1.4	3.9	2.8	5.6			
	<b>PK266-01AR11</b>		Bipolar (Series)	166	1.17	0.71	11	14.8	40			
	<b>PK266-01AR12</b>		Unipolar	127	0.9	1	7.4	7.4	10			
	<b>PK266-02AR11</b>		Bipolar (Series)	166	1.17	1.4	5	3.6	10			
	<b>PK266-02AR12</b>		Unipolar	127	0.9	2	3.6	1.8	2.5			
	<b>PK266-03AR11</b>		Bipolar (Series)	166	1.17	2.1	3.2	1.5	4.4			
	<b>PK266-03AR12</b>		Unipolar	127	0.9	3	2.3	0.75	1.1			
	<b>PK266-E2.0AR11</b>		Bipolar (Parallel)	166	1.17	2.8	2.52	0.9	2.5			
	<b>PK266-E2.0AR12</b>		Bipolar (Series)	166	1.17	1.4	5	3.6	10			
	<b>PK266-E2.0AR12</b>		Unipolar	127	0.9	2	3.6	1.8	2.5			

● The value given for holding torque is the value when operated with rated voltage and 2-phase excitation.

Motor Frame Size:  2.22 in. ( 56.4 mm) **PK26**

Type	Model Single Shaft Double Shaft	Basic Step Angle	Connection Type	Holding Torque		Current per Phase A/phase	Voltage VDC	Resistance $\Omega$ /phase	Inductance mH/phase	Rotor Inertia		Page
				oz-in	N-m					oz-in <sup>2</sup>	kg-m <sup>2</sup>	
High Resolution Type	<b>PK264M-01A</b>	0.9°	Bipolar (Series)	68	0.48	0.71	8.1	11.4	26	0.66	$120 \times 10^{-7}$	C-218
	<b>PK264M-01B</b>		Unipolar	55	0.39	1	5.7	5.7	6.5			
	<b>PK264M-02A</b>		Bipolar (Series)	68	0.48	1.4	3.9	2.8	6.8			
	<b>PK264M-02B</b>		Unipolar	55	0.39	2	2.8	1.4	1.7			
	<b>PK264M-03A</b>		Bipolar (Series)	68	0.48	2.1	2.6	1.26	3			
	<b>PK264M-03B</b>		Unipolar	55	0.39	3	1.9	0.63	0.75			
	<b>PK264M-E2.0A</b>		Bipolar (Parallel)	68	0.48	2.8	1.96	0.7	1.7			
	<b>PK264M-E2.0B</b>		Bipolar (Series)	68	0.48	1.4	3.9	2.8	6.8			
			Unipolar	55	0.39	2	2.8	1.4	1.7			
	<b>PK266M-01A</b>		Bipolar (Series)	166	1.17	0.71	11	14.8	50.8			
	<b>PK266M-01B</b>		Unipolar	127	0.9	1	7.4	7.4	12.7			
	<b>PK266M-02A</b>		Bipolar (Series)	166	1.17	1.4	5	3.6	12.8			
	<b>PK266M-02B</b>		Unipolar	127	0.9	2	3.6	1.8	3.2			
	<b>PK266M-03A</b>		Bipolar (Series)	166	1.17	2.1	3.2	1.5	5.8			
	<b>PK266M-03B</b>		Unipolar	127	0.9	3	2.3	0.75	1.45			
	<b>PK266M-E2.0A</b>		Bipolar (Parallel)	166	1.17	2.8	2.52	0.9	3.2			
	<b>PK266M-E2.0B</b>		Bipolar (Series)	166	1.17	1.4	5	3.6	12.8			
			Unipolar	127	0.9	2	3.6	1.8	3.2			
	<b>PK268M-01A</b>		Bipolar (Series)	248	1.75	0.71	12	17.2	77.6			
	<b>PK268M-01B</b>		Unipolar	191	1.35	1	8.6	8.6	19.4			
	<b>PK268M-02A</b>		Bipolar (Series)	248	1.75	1.4	6.3	4.5	19.2			
	<b>PK268M-02B</b>		Unipolar	191	1.35	2	4.5	2.25	4.8			
	<b>PK268M-03A</b>		Bipolar (Series)	248	1.75	2.1	4.2	2	8.4			
	<b>PK268M-03B</b>		Unipolar	191	1.35	3	3	1	2.1			
<b>PK268M-E2.0A</b>	Bipolar (Parallel)	240	1.75	2.8	3.16	1.13	4.8					
<b>PK268M-E2.0B</b>	Bipolar (Series)	240	1.75	1.4	6.3	4.5	19.2					
	Unipolar	191	1.35	2	4.5	2.25	4.8					
High Resolution Type with Encoder	<b>PK264M-01AR11</b>	0.9°	Bipolar (Series)	68	0.48	0.71	8.1	11.4	26	0.66	$120 \times 10^{-7}$	C-236
	<b>PK264M-01AR12</b>		Unipolar	55	0.39	1	5.7	5.7	6.5			
	<b>PK264M-02AR11</b>		Bipolar (Series)	68	0.48	1.4	3.9	2.8	6.8			
	<b>PK264M-02AR12</b>		Unipolar	55	0.39	2	2.8	1.4	1.7			
	<b>PK264M-03AR11</b>		Bipolar (Series)	68	0.48	2.1	2.6	1.26	3			
	<b>PK264M-03AR12</b>		Unipolar	55	0.39	3	1.9	0.63	0.75			
	<b>PK264M-E2.0AR11</b>		Bipolar (Parallel)	68	0.48	2.8	1.96	0.7	1.7			
	<b>PK264M-E2.0AR12</b>		Bipolar (Series)	68	0.48	1.4	3.9	2.8	6.8			
			Unipolar	55	0.39	2	2.8	1.4	1.7			
	<b>PK266M-01AR11</b>		Bipolar (Series)	166	1.17	0.71	11	14.8	50.8			
	<b>PK266M-01AR12</b>		Unipolar	127	0.9	1	7.4	7.4	12.7			
	<b>PK266M-02AR11</b>		Bipolar (Series)	166	1.17	1.4	5	3.6	12.8			
	<b>PK266M-02AR12</b>		Unipolar	127	0.9	2	3.6	1.8	3.2			
	<b>PK266M-03AR11</b>		Bipolar (Series)	166	1.17	2.1	3.2	1.5	5.8			
	<b>PK266M-03AR12</b>		Unipolar	127	0.9	3	2.3	0.75	1.45			
	<b>PK266M-E2.0AR11</b>		Bipolar (Parallel)	166	1.17	2.8	2.52	0.9	3.2			
	<b>PK266M-E2.0AR12</b>		Bipolar (Series)	166	1.17	1.4	5	3.6	12.8			
			Unipolar	127	0.9	2	3.6	1.8	3.2			

• The value given for holding torque is the value when operated with rated voltage and 2-phase excitation.

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**Motor Frame Size: 2.22 in. (56.4 mm) PK264** Frame Size of **SH** Geared Type is 2.36 in. (60 mm)

Type	Model Single Shaft Double Shaft	Basic Step Angle	Connection Type	Holding Torque		Current per Phase A/phase	Voltage VDC	Resistance $\Omega$ /phase	Inductance mH/phase	Rotor Inertia		Page
				lb-in	N-m					oz-in <sup>2</sup>	kg-m <sup>2</sup>	
SH Geared Type	<b>PK264A1A-SG3.6</b>	0.5°	Bipolar (Series)	8.8	1	0.71	8.1	11.4	21.6	0.66	120×10 <sup>-7</sup>	C-222
	Unipolar		1			5.7						
	<b>PK264A1A-SG7.2</b>	0.25°	Bipolar (Series)	17.7	2	0.71	8.1	11.4	21.6			
	Unipolar		1			5.7						
	<b>PK264A1A-SG9</b>	0.2°	Bipolar (Series)	22	2.5	0.71	8.1	11.4	21.6			
	Unipolar		1			5.7						
	<b>PK264A1A-SG10</b>	0.18°	Bipolar (Series)	23	2.7	0.71	8.1	11.4	21.6			
	Unipolar		1			5.7						
	<b>PK264A1A-SG18</b>	0.1°	Bipolar (Series)	26	3	0.71	8.1	11.4	21.6			
	Unipolar		1			5.7						
	<b>PK264A1A-SG36</b>	0.05°	Bipolar (Series)	35	4	0.71	8.1	11.4	21.6			
	Unipolar		1			5.7				5.4		
	<b>PK264A2A-SG3.6</b>	0.5°	Bipolar (Series)	8.8	1	1.4	3.9	2.8	5.6	0.66	120×10 <sup>-7</sup>	C-222
	Unipolar		2			2.8						
	<b>PK264A2A-SG7.2</b>	0.25°	Bipolar (Series)	17.7	2	1.4	3.9	2.8	5.6			
	Unipolar		2			2.8						
	<b>PK264A2A-SG9</b>	0.2°	Bipolar (Series)	22	2.5	1.4	3.9	2.8	5.6			
	Unipolar		2			2.8						
	<b>PK264A2A-SG10</b>	0.18°	Bipolar (Series)	23	2.7	1.4	3.9	2.8	5.6			
	Unipolar		2			2.8						
<b>PK264A2A-SG18</b>	0.1°	Bipolar (Series)	26	3	1.4	3.9	2.8	5.6				
Unipolar		2			2.8				1.4			
<b>PK264A2A-SG36</b>	0.05°	Bipolar (Series)	35	4	1.4	3.9	2.8	5.6				
Unipolar		2			2.8				1.4	1.4		

• The value given for holding torque is the value when operated with rated voltage and 2-phase excitation.

**Motor Frame Size: 2.36 in. (60 mm) PV26**

Type	Model Single Shaft Double Shaft	Basic Step Angle	Connection Type	Holding Torque		Current per Phase A/phase	Voltage VDC	Resistance $\Omega$ /phase	Inductance mH/phase	Rotor Inertia		Page
				oz-in	N-m					oz-in <sup>2</sup>	kg-m <sup>2</sup>	
PV Series (High Inertia Capability)	<b>PV264-02AA</b>	1.8°	Bipolar (Series)	150	1.06	1.4	4.1	2.92	7.2	1.53	280×10 <sup>-7</sup>	C-224
	Unipolar		106									
	<b>PV264-D2.8AA</b>		Bipolar	150	1.06	2.8	2.1	0.73	1.8			
	<b>PV264-D2.8BA</b>											
	<b>PV266-02AA</b>		Bipolar (Series)	240	1.75	1.4	5.6	4	12.2			
	Unipolar											
	<b>PV266-D2.8AA</b>		Bipolar	240	1.75	2.8	2.8	1	3.05			
	<b>PV266-D2.8BA</b>											
	<b>PV267-02AA</b>		Bipolar (Series)	310	2.2	1.4	6.7	4.8	14.2			
	Unipolar									240	1.7	2
	<b>PV267-D2.8AA</b>		Bipolar	310	2.2	2.8	3.4	1.2	3.54			
	<b>PV267-D2.8BA</b>											
	<b>PV269-02AA</b>		Bipolar (Series)	440	3.1	1.4	8.3	5.96	22.8			
	Unipolar									310	2.2	2
	<b>PV269-D2.8AA</b>		Bipolar	440	3.1	2.8	4.2	1.49	5.7			
	<b>PV269-D2.8BA</b>											

• The value given for holding torque is the value when operated with rated voltage and 2-phase excitation.

## Motor Frame Size: □3.35 in. (□85 mm) PK29□

Type	Model Single Shaft Double Shaft	Basic Step Angle	Connection Type	Holding Torque		Current per Phase A/phase	Voltage VDC	Resistance Ω/phase	Inductance mH/phase	Rotor Inertia		Page
				oz-in	N-m					oz-in <sup>2</sup>	kg-m <sup>2</sup>	
Standard Type	<b>PK296-01AA</b>	1.8°	Bipolar (Series)	440	3.1	1.4	6.2	4.4	30.8	7.7	1400×10 <sup>-7</sup>	C-277
	<b>PK296-01BA</b>		Unipolar	310	2.2	2	4.4	2.2	7.7			
	<b>PK296-02AA</b>		Bipolar (Series)	440	3.1	2.1	4.2	2	14			
	<b>PK296-02BA</b>		Unipolar	310	2.2	3	3	1	3.5			
	<b>PK296-03AA</b>		Bipolar (Series)	440	3.1	3.18	2.8	0.96	6			
	<b>PK296-03BA</b>		Unipolar	310	2.2	4.5	2	0.48	1.5			
	<b>PK296-F4.5A</b>		Bipolar (Parallel)	440	3.1	6.3	1.4	0.24	1.5			
	<b>PK296-F4.5B</b>		Bipolar (Series)	440	3.1	3.18	2.8	0.96	6			
	<b>PK299-01AA</b>		Bipolar (Series)	880	6.2	1.4	9	6.4	56			
	<b>PK299-01BA</b>		Unipolar	620	4.4	2	6.4	3.2	14			
	<b>PK299-02AA</b>		Bipolar (Series)	880	6.2	2.1	6	3	24			
	<b>PK299-02BA</b>		Unipolar	620	4.4	3	4.2	1.5	6			
	<b>PK299-03AA</b>		Bipolar (Series)	880	6.2	3.18	3.9	1.32	10			
	<b>PK299-03BA</b>		Unipolar	620	4.4	4.5	2.8	0.66	2.5			
	<b>PK299-F4.5A</b>		Bipolar (Parallel)	880	6.2	6.3	1.9	0.33	2.5			
	<b>PK299-F4.5B</b>		Bipolar (Series)	880	6.2	3.18	3.9	1.32	10			
	<b>PK2913-01AA</b>		Bipolar (Series)	1320	9.3	1.4	10	7.6	76.8			
	<b>PK2913-01BA</b>		Unipolar	930	6.6	2	7.6	3.8	19.2			
	<b>PK2913-02AA</b>		Bipolar (Series)	1320	9.3	2.8	5.3	1.94	16.8			
	<b>PK2913-02BA</b>		Unipolar	930	6.6	4	3.8	0.97	4.2			
<b>PK2913-F4.0A</b>	Bipolar (Parallel)	1320	9.3	5.6	2.6	0.49	4.2					
<b>PK2913-F4.0B</b>	Bipolar (Series)	1320	9.3	2.8	5.3	1.94	16.8					
	Unipolar	930	6.6	4	3.8	0.97	4.2					

• The value given for holding torque is the value when operated with rated voltage and 2-phase excitation.

## Motor Frame Size: □3.35 in. (□85 mm) PK296 Frame Size of SH Geared Type is □3.54 in. (□90 mm)

Type	Model Single Shaft Double Shaft	Basic Step Angle	Connection Type	Holding Torque		Current per Phase A/phase	Voltage VDC	Resistance Ω/phase	Inductance mH/phase	Rotor Inertia		Page
				lb-in	N-m					oz-in <sup>2</sup>	kg-m <sup>2</sup>	
SH Geared Type	<b>PK296A1A-SG3.6</b>	0.5°	Bipolar (Series)	22	2.5	1	4.4	4.4	30.8	7.7	1400×10 <sup>-7</sup>	C-231
	<b>PK296B1A-SG3.6</b>		Unipolar			1.5	3.3	2.2	7.7			
	<b>PK296A1A-SG7.2</b>	0.25°	Bipolar (Series)	44	5	1	4.4	4.4	30.8			
	<b>PK296B1A-SG7.2</b>		Unipolar			1.5	3.3	2.2	7.7			
	<b>PK296A1A-SG9</b>	0.2°	Bipolar (Series)	55	6.3	1	4.4	4.4	30.8			
	<b>PK296B1A-SG9</b>		Unipolar			1.5	3.3	2.2	7.7			
	<b>PK296A1A-SG10</b>	0.18°	Bipolar (Series)	61	7	1	4.4	4.4	30.8			
	<b>PK296B1A-SG10</b>		Unipolar			1.5	3.3	2.2	7.7			
	<b>PK296A1A-SG18</b>	0.1°	Bipolar (Series)	79	9	1	4.4	4.4	30.8			
	<b>PK296B1A-SG18</b>		Unipolar			1.5	3.3	2.2	7.7			
	<b>PK296A1A-SG36</b>	0.05°	Bipolar (Series)	106	12	1	4.4	4.4	30.8			
	<b>PK296B1A-SG36</b>		Unipolar			1.5	3.3	2.2	7.7			
	<b>PK296A2A-SG3.6</b>	0.5°	Bipolar (Series)	22	2.5	2.1	2	0.96	6			
	<b>PK296B2A-SG3.6</b>		Unipolar			3	1.4	0.48	1.5			
	<b>PK296A2A-SG7.2</b>	0.25°	Bipolar (Series)	44	5	2.1	2	0.96	6			
	<b>PK296B2A-SG7.2</b>		Unipolar			3	1.4	0.48	1.5			
	<b>PK296A2A-SG9</b>	0.2°	Bipolar (Series)	55	6.3	2.1	2	0.96	6			
	<b>PK296B2A-SG9</b>		Unipolar			3	1.4	0.48	1.5			
	<b>PK296A2A-SG10</b>	0.18°	Bipolar (Series)	61	7	2.1	2	0.96	6			
	<b>PK296B2A-SG10</b>		Unipolar			3	1.4	0.48	1.5			
<b>PK296A2A-SG18</b>	0.1°	Bipolar (Series)	79	9	2.1	2	0.96	6				
<b>PK296B2A-SG18</b>		Unipolar			3	1.4	0.48	1.5				
<b>PK296A2A-SG36</b>	0.05°	Bipolar (Series)	106	12	2.1	2	0.96	6				
<b>PK296B2A-SG36</b>		Unipolar			3	1.4	0.48	1.5				

• The value given for holding torque is the value when operated with rated voltage and 2-phase excitation.

Introduction

AS

AS PLUS

ASC

RK

CRK II

CSK

PMC

UMK

CSK

PK/PV

PK

UN2120G

EMP401

EMP402

SG8030J

SMK

Accessories

Before Using a Stepping Motor

Controllers

Low-Speed Synchronous Motors

Driver with Indexer

C-195

# 1.10 in. (28 mm)

## Step Angle 1.8°

### PK Series High Torque Type



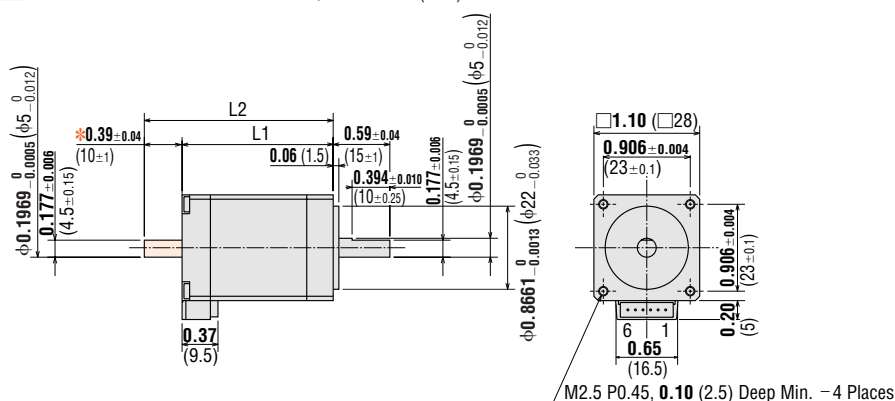
## Specifications

Model	Connection Type	Holding Torque		Current per Phase A/phase	Voltage VDC	Resistance per Phase Ω/phase	Inductance mH/phase	Rotor Inertia J		Lead Wires (Pins)
		oz-in	N-m					oz-in <sup>2</sup>	kg·m <sup>2</sup>	
<b>PK223PA</b>	Bipolar (Series)	9.2	0.065	0.67	3.8	5.6	4	0.049	9×10 <sup>-7</sup>	6
<b>PK223PB</b>	Unipolar	7.1	0.05	0.95	2.66	2.8	1			
<b>PK224PA</b>	Bipolar (Series)	13.7	0.097	0.67	4.6	6.8	4.8	0.066	12×10 <sup>-7</sup>	6
<b>PK224PB</b>	Unipolar	10.6	0.075	0.95	3.2	3.4	1.2			
<b>PK225PA</b>	Bipolar (Series)	15.6	0.11	0.67	6.2	9.2	5.6	0.098	18×10 <sup>-7</sup>	6
<b>PK225PB</b>	Unipolar	12.7	0.09	0.95	4.4	4.6	1.4			

How to Read Specifications → Page C-9

Motor Wiring Diagrams → Page C-189

## Dimensions Scale 1/2, Unit = inch (mm)



- \* The length of machining on double shaft model is 0.394±0.010 (10±0.25).
- These dimensions are for double shaft models. For single shaft models, ignore the shaded area.

### Applicable Connector

The following housing and contacts must be purchased separately.

Housing: 51065-0600 (MOLEX)

Contact: 50212-8100 (MOLEX)

Connector Assembly Tool: 57176-5000 (MOLEX)

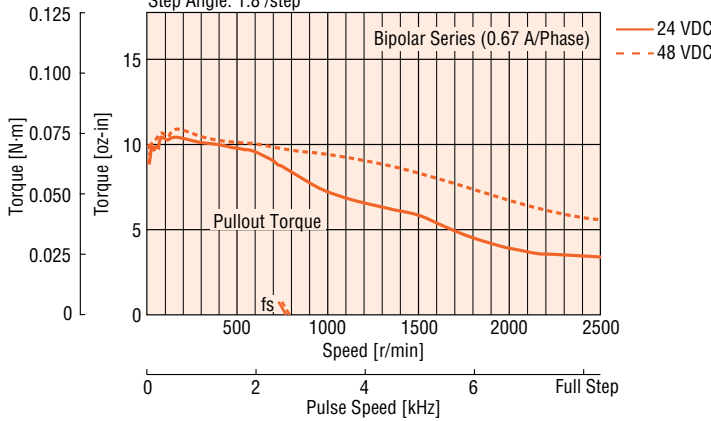
Model	L1 inch (mm)	L2 inch (mm)	Weight lb. (kg)	DXF
<b>PK223PA</b>	1.26 (32)	—	0.24 (0.11)	B326
<b>PK223PB</b>		1.65 (42)		
<b>PK224PA</b>	1.57 (40)	—	0.31 (0.14)	B327
<b>PK224PB</b>		1.97 (50)		
<b>PK225PA</b>	2.03 (51.5)	—	0.44 (0.2)	B328
<b>PK225PB</b>		2.42 (61.5)		

## Speed-Torque Characteristics

How to Read Speed-Torque Characteristics → Page C-10

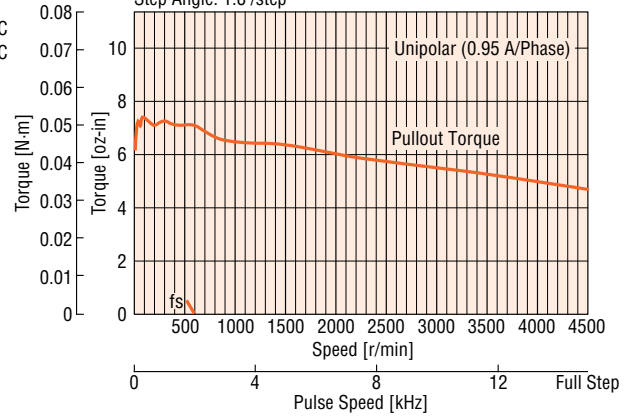
### PK223PB Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



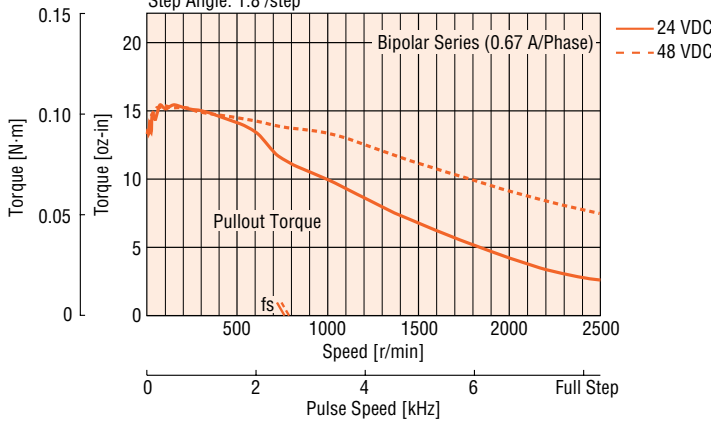
### PK223PB Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



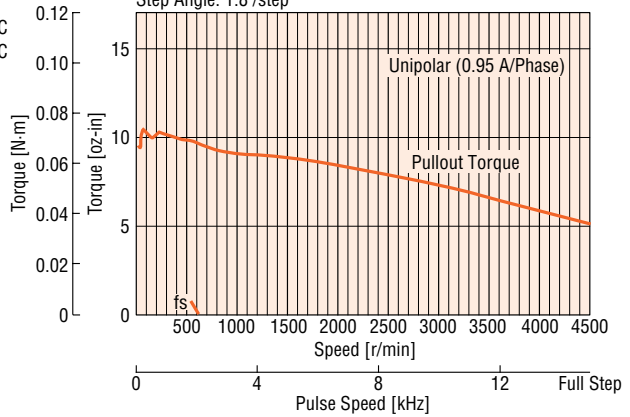
### PK224PB Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



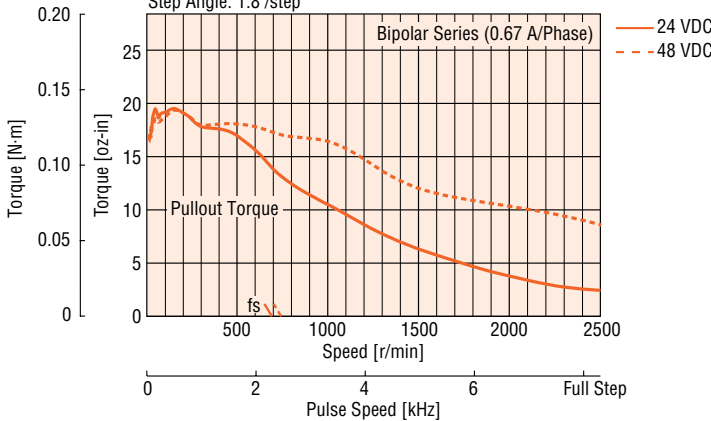
### PK224PB Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



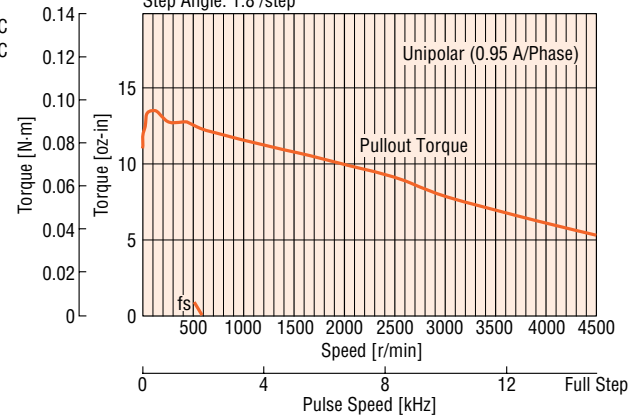
### PK225PB Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



### PK225PB Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



## Motor Cables (Sold separately)

These cables make it easy to connect the high torque type motor. The crimped connectors eliminate the need for assembly. There are two cable lengths to choose from.

Model	Cable Length		Number of Leads	Lead Specifications	
	feet	(m)		UL Style No.	AWG No.
<b>LC2U06A</b>	2	(0.6)	6 Leads	3265	24
<b>LC2U10A</b>	3.3	(1)			



Introduction	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor

# □ 1.10 in. (□ 28 mm)

## PK Series SH Geared Type



### Specifications

#### Motor Specifications

Model	Connection Type	Current per Phase	Voltage	Resistance per Phase	Inductance	Rotor Inertia J		Lead Wires (Pins)
						oz-in <sup>2</sup>	kg-m <sup>2</sup>	
Single Shaft	Bipolar (Series)	A/phase	VDC	Ω/phase	mH/phase	oz-in <sup>2</sup>	kg-m <sup>2</sup>	6
Double Shaft								
<b>PK223PA-SG</b> □		0.67	3.8	5.6	4	0.049	9×10 <sup>-7</sup>	6
<b>PK223PB-SG</b> □	Unipolar	0.95	2.66	2.8	1			

How to Read Specifications → Page C-9

Motor Wiring Diagrams → Page C-189

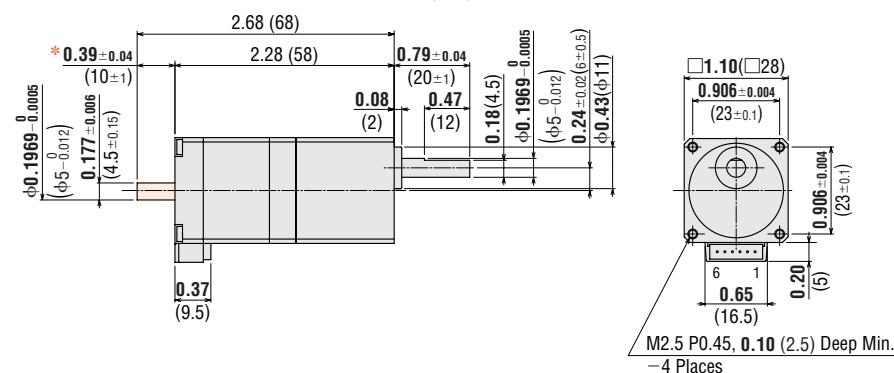
• Enter the gear ratio in the box (□) within the model number.

#### Gearmotor Specifications

Model	Gear Ratio	Holding Torque*		Step Angle	Permissible Speed
		oz-in	N-m		
Single Shaft	7.2:1	42	0.3	0.25°	250
Double Shaft					
<b>PK223PA-SG7.2</b>	9:1	42	0.3	0.2°	200
<b>PK223PB-SG7.2</b>					
<b>PK223PA-SG9</b>	10:1	42	0.3	0.18°	180
<b>PK223PB-SG9</b>					
<b>PK223PA-SG10</b>	18:1	56	0.4	0.1°	100
<b>PK223PB-SG10</b>					
<b>PK223PA-SG18</b>	36:1	56	0.4	0.05°	50
<b>PK223PB-SG18</b>					
<b>PK223PA-SG36</b>					
<b>PK223PB-SG36</b>					

\* Holding torque is the same regardless of the connection type, due to the permissible torque limit of the gearhead.

### Dimensions Scale 1/2, Unit = inch (mm)



\* The length of machining on double shaft model is 0.394±0.010 (10±0.25).

#### Mounting Screws (included)

M2.5 P0.45 0.31 in. (8 mm) length: 4 pieces

• These dimensions are for double shaft models. For single shaft models, ignore the shaded area.

#### Applicable Connector

The following housing and contacts must be purchased separately.

Housing: 51065-0600 (MOLEX)

Contact: 50212-8100 (MOLEX)

Connector Assembly Tool: 57176-5000 (MOLEX)

Model	Weight lb. (kg)	DXF
<b>PK223PA-SG</b> □	0.35 (0.16)	B335
<b>PK223PB-SG</b> □		

• Enter the gear ratio in the box (□) within the model number.

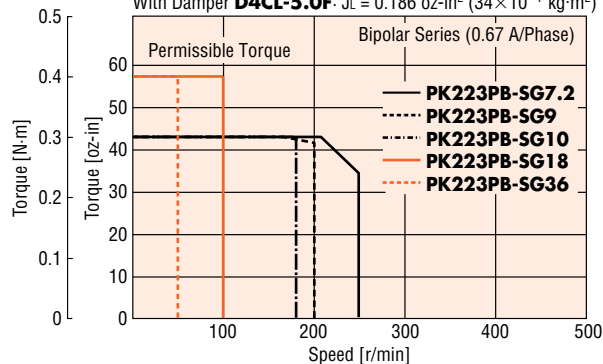


## Speed-Torque Characteristics

How to Read Speed-Torque Characteristics → Page C-10

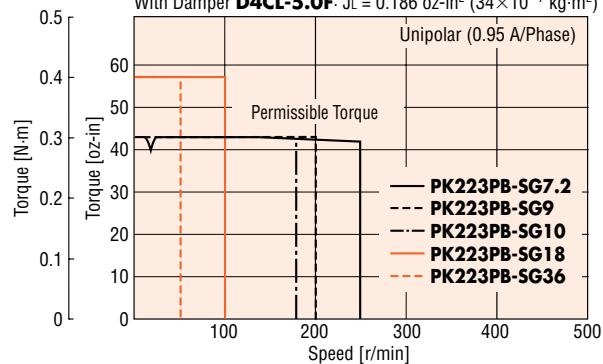
### PK223PB-SG □ Bipolar (Series) 24 VDC

Power Input: 24 VDC Bipolar Constant Current Driver  
With Damper **D4CL-5.OF**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$



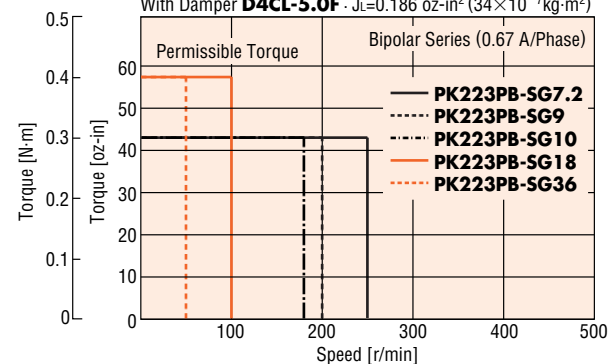
### PK223PB-SG □ Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D4CL-5.OF**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$



### PK223PB-SG □ Bipolar (Series) 48 VDC

Power Input: 48 VDC Bipolar Constant Current Driver  
With Damper **D4CL-5.OF**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$



## Motor Cables (Sold separately)

These cables make it easy to connect the high torque type motor. The crimped connectors eliminate the need for assembly. There are two cable lengths to choose from.

Model	Cable Length		Number of Leads	Lead Specifications	
	feet	(m)		UL Style No.	AWG No.
<b>LC2U06A</b>	2	(0.6)	6 Leads	3265	24
<b>LC2U10A</b>	3.3	(1)			



# 1.38 in. (35 mm)

## Step Angle 1.8°

### PK Series High Torque Type



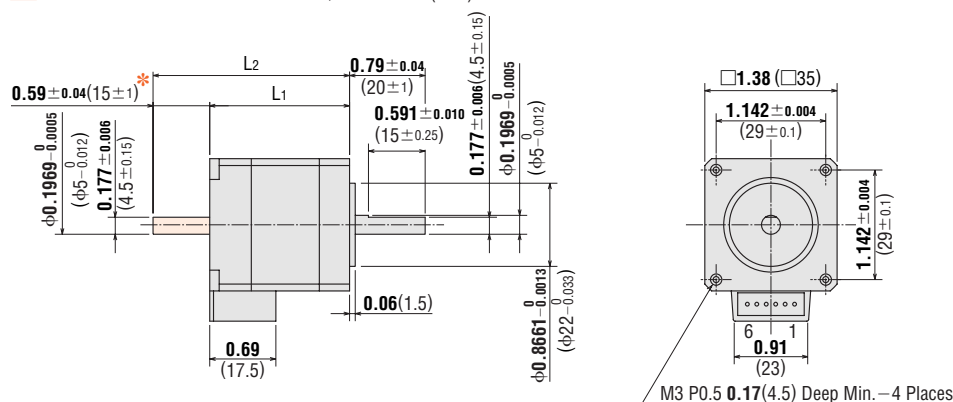
## Specifications

Model	Connection Type	Holding Torque		Current per Phase A/phase	Voltage VDC	Resistance per Phase Ω/phase	Inductance mH/phase	Rotor Inertia J		Lead Wires (Pins)
		oz-in	N-m					oz-in <sup>2</sup>	kg-m <sup>2</sup>	
<b>PK233PA</b>	Bipolar (Series)	28	0.2	0.85	4.6	5.4	5.6	0.131	24×10 <sup>-7</sup>	6
<b>PK233PB</b>	Unipolar	22	0.16	1.2	3.24	2.7	1.4			
<b>PK235PA</b>	Bipolar (Series)	52	0.37	0.85	5.8	6.8	8	0.27	50×10 <sup>-7</sup>	6
<b>PK235PB</b>	Unipolar	42	0.3	1.2	4.08	3.4	2			

How to Read Specifications → Page C-9

Motor Wiring Diagrams → Page C-189

## Dimensions Scale 1/2, Unit = inch (mm)



\* The length of machining on double shaft model is  $0.591 \pm 0.010$  (15±0.25).

• These dimensions are for double shaft models. For single shaft models, ignore the shaded area.

### Applicable Connector

The following housing and contacts must be purchased separately.

Housing: 51103-0600 (MOLEX, Positive Lock Type) or

51102-0600 (MOLEX, Friction Lock Type)

Contact: 50351-8100 (MOLEX)

Connector Assembly Tool: 57295-5000 (MOLEX)

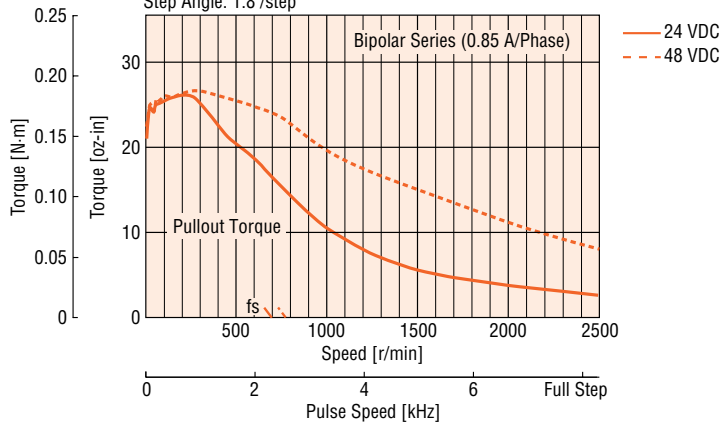
Model	L1 inch (mm)	L2 inch (mm)	Weight lb. (kg)	DXF
<b>PK233PA</b>	1.46 (37)	—	0.4 (0.18)	B329
<b>PK233PB</b>		2.05 (52)		
<b>PK235PA</b>	2.05 (52)	—	0.63 (0.285)	B330
<b>PK235PB</b>		2.64 (67)		

## Speed-Torque Characteristics

How to Read Speed-Torque Characteristics → Page C-10

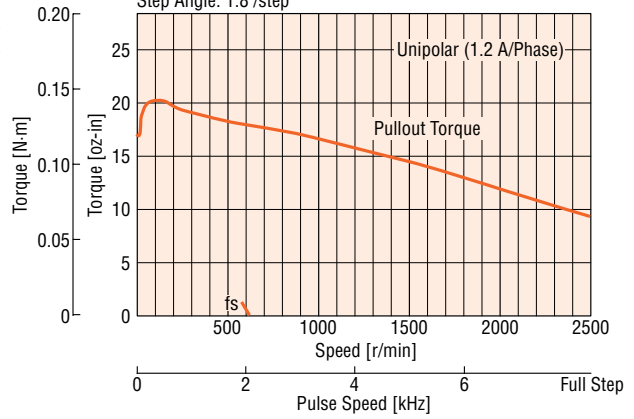
### PK233PB Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$



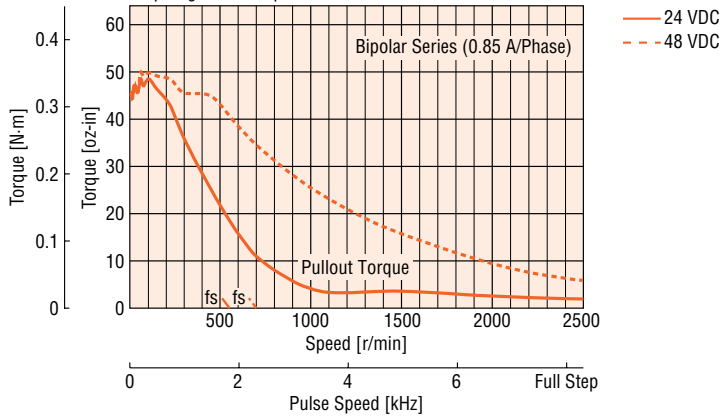
### PK233PB Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$



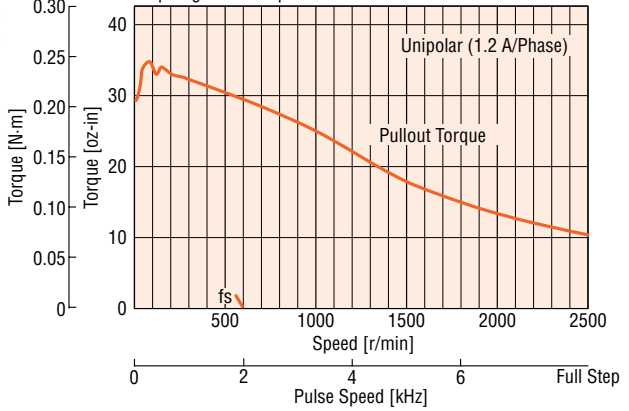
### PK235PB Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$



### PK235PB Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$



## Motor Cables (Sold separately)

These cables make it easy to connect the high torque type motor. The crimped connectors eliminate the need for assembly. There are two cable lengths to choose from.

Model	Cable Length		Number of Leads	Lead Specifications	
	feet	(m)		UL Style No.	AWG No.
<b>LC2U06B</b>	2	(0.6)	6 Leads	3265	24
<b>LC2U10B</b>	3.3	(1)			



Introduction	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	U12120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	U12120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	U12120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	U12120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	U12120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	U12120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	U12120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	U12120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	U12120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	U12120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor

# 1.65 in. (42 mm)

## Step Angle 1.8°

### PK Series High Torque Type



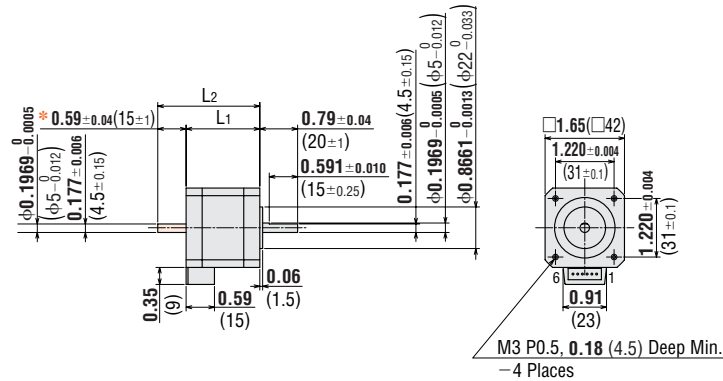
## Specifications

Model	Connection Type	Holding Torque		Current per Phase A/phase	Voltage VDC	Resistance per Phase Ω/phase	Inductance mH/phase	Rotor Inertia J		Lead Wires (Pins)
		oz-in	N-m					oz-in <sup>2</sup>	kg-m <sup>2</sup>	
<b>PK244PA</b>	Bipolar (Series)	68	0.48	0.85	6.8	8	15.6	0.31	57×10 <sup>-7</sup>	6
<b>PK244PB</b>	Unipolar	55	0.39	1.2	4.8	4	3.9			
<b>PK246PA</b>	Bipolar (Series)	132	0.93	0.85	10	12	26	0.62	114×10 <sup>-7</sup>	6
<b>PK246PB</b>	Unipolar	106	0.75	1.2	7.2	6	6.5			

How to Read Specifications → Page C-9

Motor Wiring Diagrams → Page C-189

## Dimensions Scale 1/4, Unit = inch (mm)



- \* The length of machining on double shaft model is 0.591 ± 0.010 (15 ± 0.25).
- These dimensions are for double shaft models. For single shaft models, ignore the shaded area.

### Applicable Connector

The following housing and contacts must be purchased separately.

Housing: 51103-0600 (MOLEX, Positive Lock Type) or

51102-0600 (MOLEX, Friction Lock Type)

Contact: 50351-8100 (MOLEX)

Connector Assembly Tool: 57295-5000 (MOLEX)

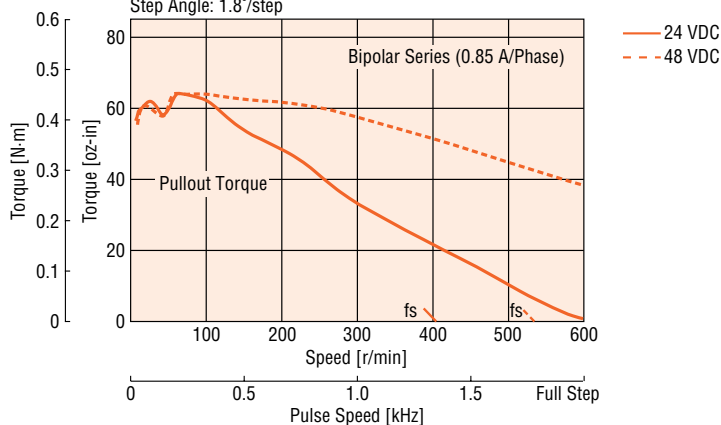
Model	L1 inch (mm)	L2 inch (mm)	Weight lb. (kg)	DXF
<b>PK244PA</b>	1.54 (39)	—	0.66 (0.3)	B331
<b>PK244PB</b>		2.13 (54)		
<b>PK246PA</b>	2.32 (59)	—	1.1 (0.5)	B332
<b>PK246PB</b>		2.91 (74)		

## Speed-Torque Characteristics

How to Read Speed-Torque Characteristics → Page C-10

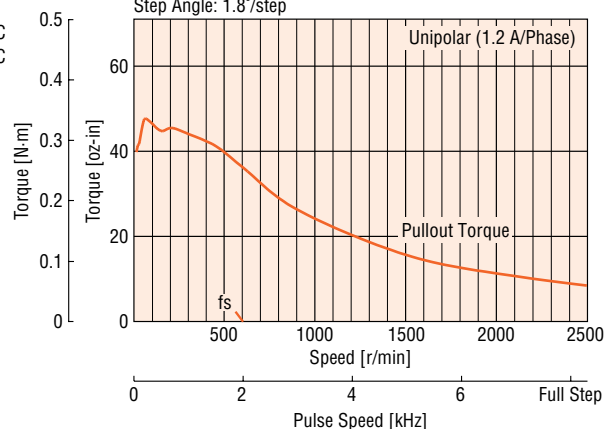
### ● PK244PB Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$



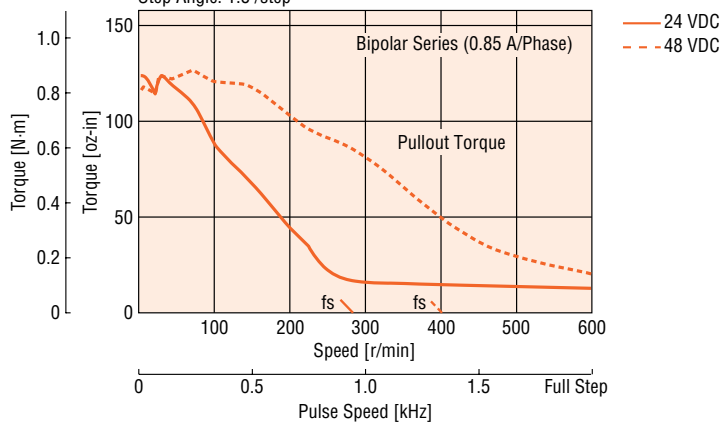
### ● PK244PB Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$



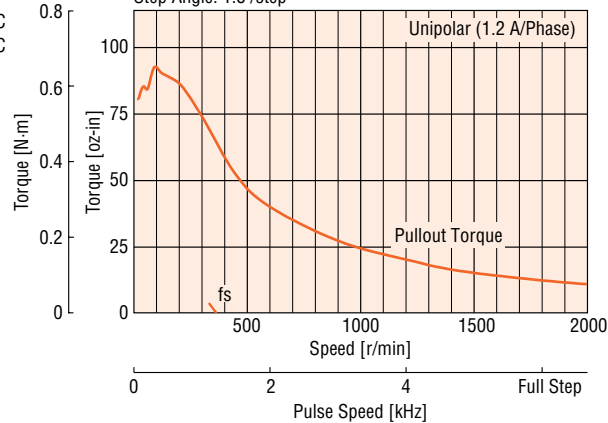
### ● PK246PB Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$



### ● PK246PB Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$



## Motor Cables (Sold separately)

These cables make it easy to connect the high torque type motor. The crimped connectors eliminate the need for assembly. There are two cable lengths to choose from.

Model	Cable Length		Number of Leads	Lead Specifications	
	feet	(m)		UL Style No.	AWG No.
<b>LC2U06B</b>	2	(0.6)	6 Leads	3265	24
<b>LC2U10B</b>	3.3	(1)			



# □ 1.65 in. (□ 42 mm)

## Step Angle 1.8°

### PK Series Standard Type



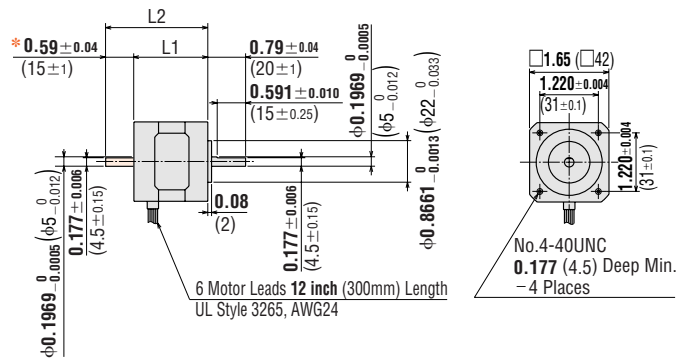
## ■ Specifications

Model	Connection Type	Holding Torque		Current per Phase A/phase	Voltage VDC	Resistance per Phase Ω/phase	Inductance mH/phase	Rotor Inertia J		Lead Wires	Corresponding AC/DC-Input Motor & Driver Package
		oz-in	N·m					oz-in <sup>2</sup>	kg·m <sup>2</sup>		
<b>PK243-01AA</b>	Bipolar (Series)	28	0.2	0.67	5.6	8.4	10	0.191	35×10 <sup>-7</sup>	6	<b>UMK243□A/CSK243-□TA</b>
<b>PK243-01BA</b>	Unipolar	22	0.16	0.95	4	4.2	2.5				
<b>PK243-02AA</b>	Bipolar (Series)	28	0.2	0.28	13	48	60	0.191	35×10 <sup>-7</sup>	6	—
<b>PK243-02BA</b>	Unipolar	22	0.16	0.4	9.6	24	15				
<b>PK243-03AA</b>	Bipolar (Series)	28	0.2	0.22	17	77	84	0.191	35×10 <sup>-7</sup>	6	—
<b>PK243-03BA</b>	Unipolar	22	0.16	0.31	12	38.5	21				
<b>PK244-01AA</b>	Bipolar (Series)	46	0.33	0.85	5.6	6.6	12.8	0.3	54×10 <sup>-7</sup>	6	<b>UMK244□A/CSK244-□TA</b>
<b>PK244-01BA</b>	Unipolar	36	0.26	1.2	4	3.3	3.2				
<b>PK244-02AA</b>	Bipolar (Series)	46	0.33	0.57	8.6	15	26.8	0.3	54×10 <sup>-7</sup>	6	—
<b>PK244-02BA</b>	Unipolar	36	0.26	0.8	6	7.5	6.7				
<b>PK244-03AA</b>	Bipolar (Series)	46	0.33	0.28	17	60	120	0.3	54×10 <sup>-7</sup>	6	—
<b>PK244-03BA</b>	Unipolar	36	0.26	0.4	12	30	30				
<b>PK244-04AA</b>	Bipolar (Series)	46	0.33	0.14	34	240	428	0.3	54×10 <sup>-7</sup>	6	—
<b>PK244-04BA</b>	Unipolar	36	0.26	0.2	24	120	107				
<b>PK245-01AA</b>	Bipolar (Series)	61	0.43	0.85	5.6	6.6	11.2	0.37	68×10 <sup>-7</sup>	6	<b>UMK245□A/CSK245-□TA</b>
<b>PK245-01BA</b>	Unipolar	45	0.32	1.2	4	3.3	2.8				
<b>PK245-02AA</b>	Bipolar (Series)	61	0.43	0.57	8.6	15	28.4	0.37	68×10 <sup>-7</sup>	6	—
<b>PK245-02BA</b>	Unipolar	45	0.32	0.8	6	7.5	7.1				
<b>PK245-03AA</b>	Bipolar (Series)	61	0.43	0.28	17	60	100	0.37	68×10 <sup>-7</sup>	6	—
<b>PK245-03BA</b>	Unipolar	45	0.32	0.4	12	30	25				

How to Read Specifications → Page C-9

Motor Wiring Diagrams → Page C-189

## ■ Dimensions Scale 1/4, Unit = inch (mm)



- \* The length of machining on double shaft model is 0.591±0.010 (15±0.25).
- These dimensions are for double shaft models. For single shaft models, ignore the shaded area.

Model	L1 inch (mm)	L2 inch (mm)	Weight lb. (kg)	DXF
<b>PK243-0□AA</b>	1.30 (33)	—	0.46 (0.21)	B081U
<b>PK243-0□BA</b>		1.89 (48)		
<b>PK244-0□AA</b>	1.54 (39)	—	0.59 (0.27)	B082U
<b>PK244-0□BA</b>		2.13 (54)		
<b>PK245-0□AA</b>	1.85 (47)	—	0.77 (0.35)	B083U
<b>PK245-0□BA</b>		2.44 (62)		

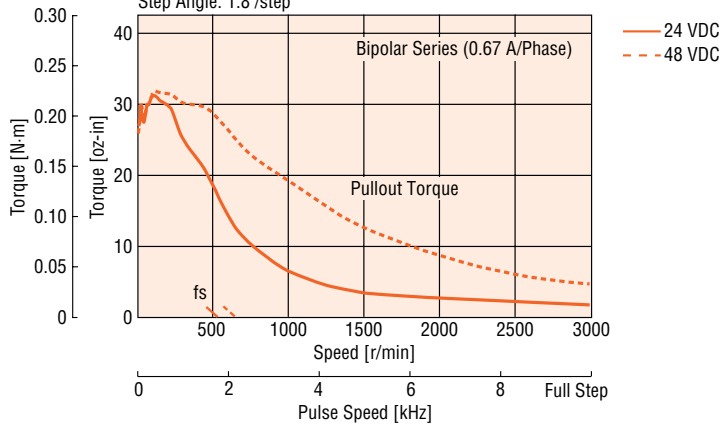
• Enter the winding specification in the box (□) within the model number.

## Speed-Torque Characteristics

How to Read Speed-Torque Characteristics → Page C-10

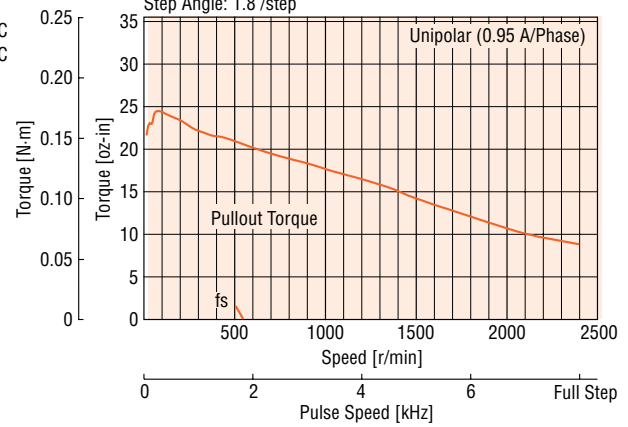
### ● PK243-01BA Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$



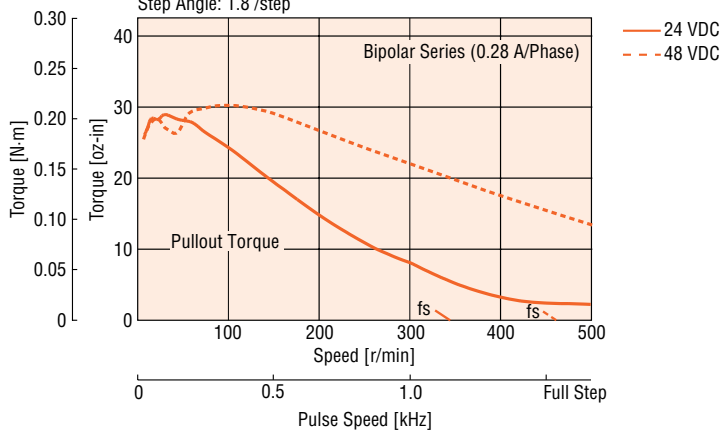
### ● PK243-01BA Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$



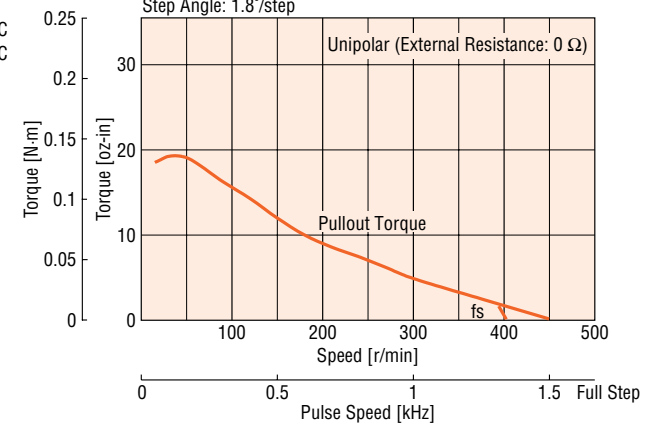
### ● PK243-02BA Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$



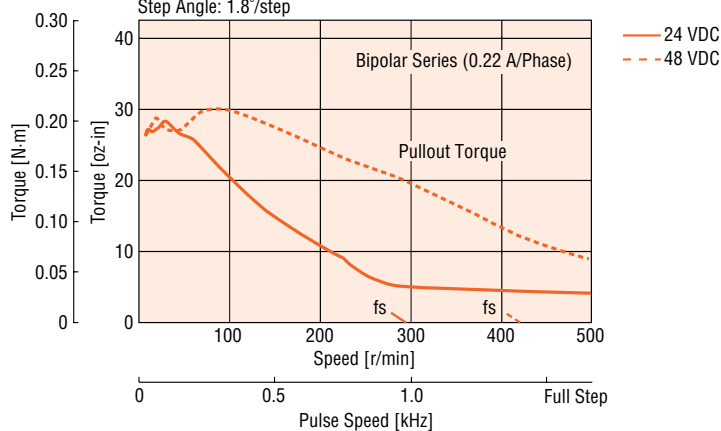
### ● PK243-02BA Unipolar

Power Input: 11.5 VDC Unipolar Constant Voltage Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$



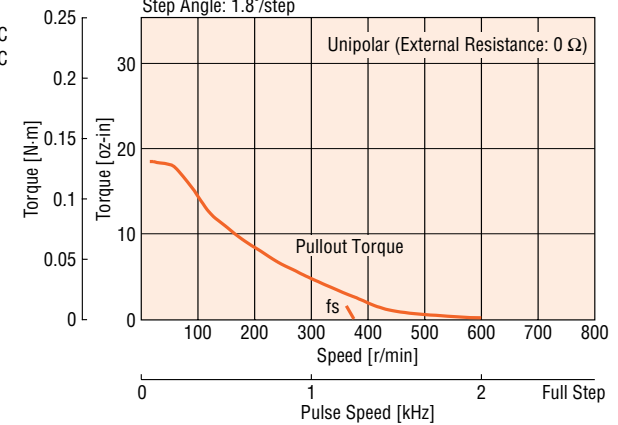
### ● PK243-03BA Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$



### ● PK243-03BA Unipolar

Power Input: 13.6 VDC Unipolar Constant Voltage Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$



Introduction

AS

AS PLUS

ASC

DC Input

5-Phase Microstep

DC Input

CRK II

CSK

PMC

UMK

CSK

Encoder

PK/P/V

PK

UI2120G

EMP401

EMP402

SG8030J

SMK

Accessories

Before Using a Stepping Motor

Controllers

Low-Speed Synchronous Motors

Driver with Indexer

Driver without Encoder

Encoder with Encoder

Encoder without Encoder

Encoder with Encoder

Encoder without Encoder

Encoder with Encoder

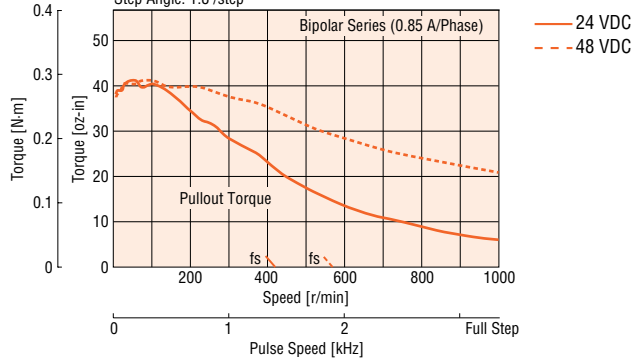
Encoder without Encoder

## Speed-Torque Characteristics

How to Read Speed-Torque Characteristics → Page C-10

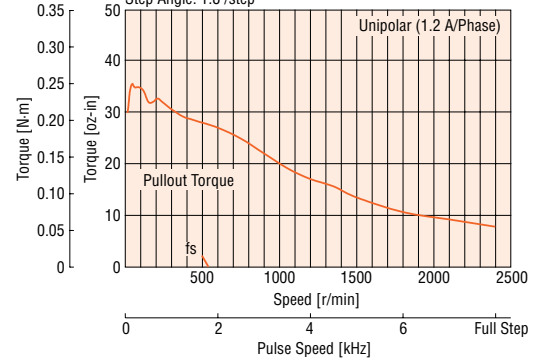
### ● PK244-01BA Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



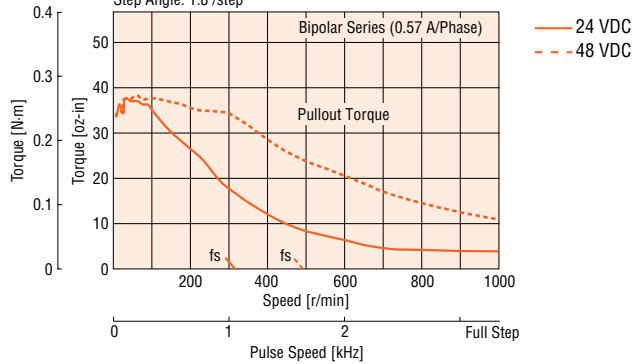
### ● PK244-01BA Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



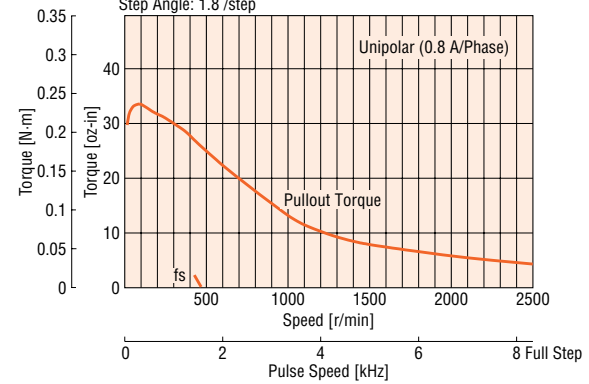
### ● PK244-02BA Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



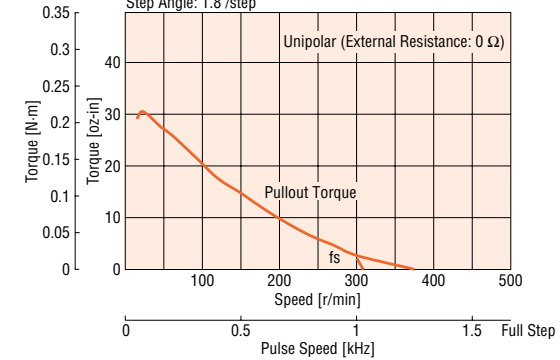
### ● PK244-02BA Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



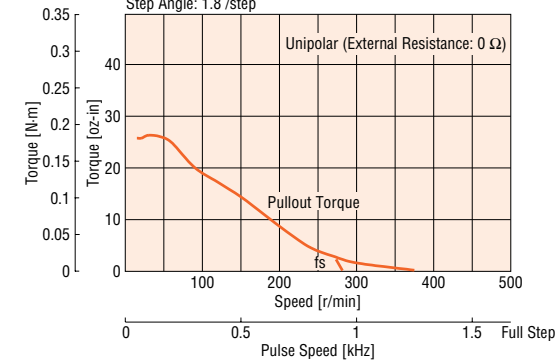
### ● PK244-03BA Unipolar

Power Input: 13.7 VDC Unipolar Constant Voltage Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



### ● PK244-04BA Unipolar

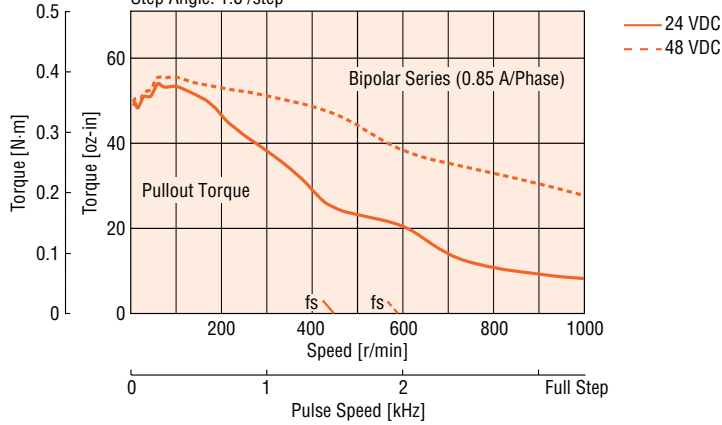
Power Input: 25.5 VDC Unipolar Constant Voltage Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step





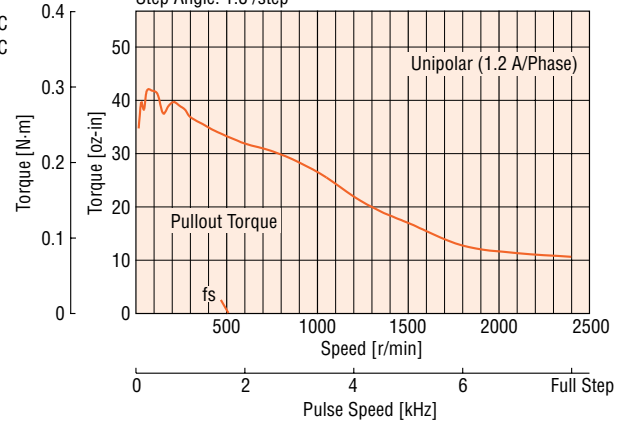
### ● PK245-01BA Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2$  ( $34 \times 10^{-7} \text{ kg-m}^2$ )  
Step Angle: 1.8°/step



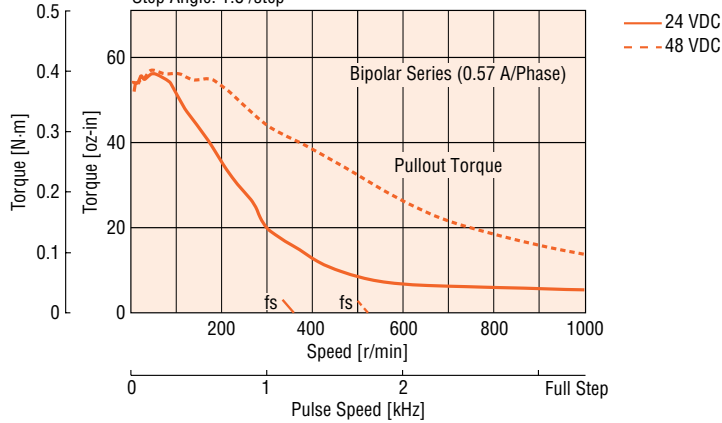
### ● PK245-01BA Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2$  ( $34 \times 10^{-7} \text{ kg-m}^2$ )  
Step Angle: 1.8°/step



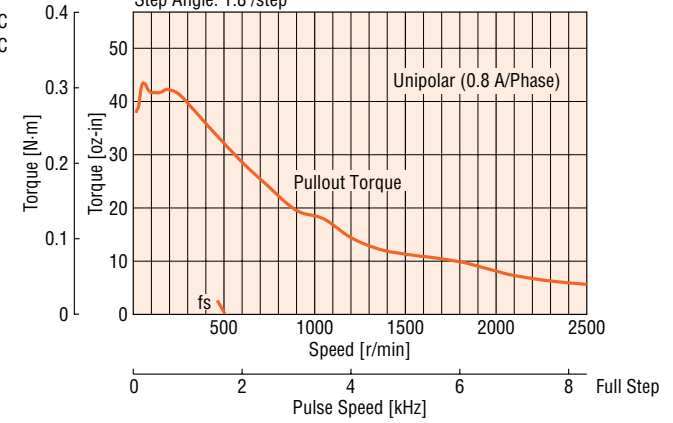
### ● PK245-02BA Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2$  ( $34 \times 10^{-7} \text{ kg-m}^2$ )  
Step Angle: 1.8°/step



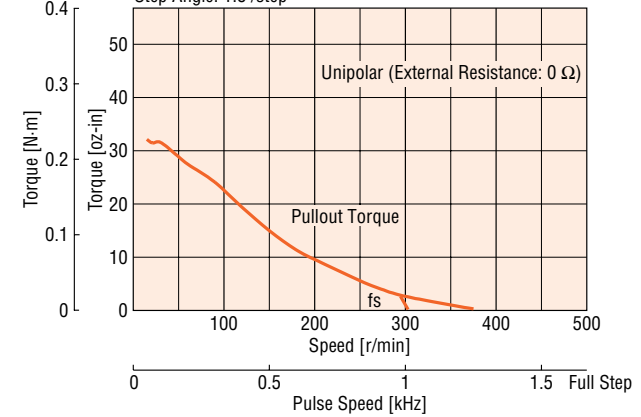
### ● PK245-02BA Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2$  ( $34 \times 10^{-7} \text{ kg-m}^2$ )  
Step Angle: 1.8°/step



### ● PK245-03BA Unipolar

Power Input: 13.7 VDC Unipolar Constant Voltage Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2$  ( $34 \times 10^{-7} \text{ kg-m}^2$ )  
Step Angle: 1.8°/step



Introduction

AS

AC Input

AS PLUS

DC Input

ASC

5-Phase Microstep

DC Input

RK

CRK II

CSK

PMC

UMK

CSK

Encoder without

PK/PV

Encoder with

PK

Driver with Indexer

UI2120G

EMP401

EMP402

SG8030J

Low-Speed Synchronous Motors

SMK

Accessories

Before Using a Stepping Motor

# □ 1.65 in. (□ 42 mm)

## Step Angle 0.9°

### PK Series High Resolution Type



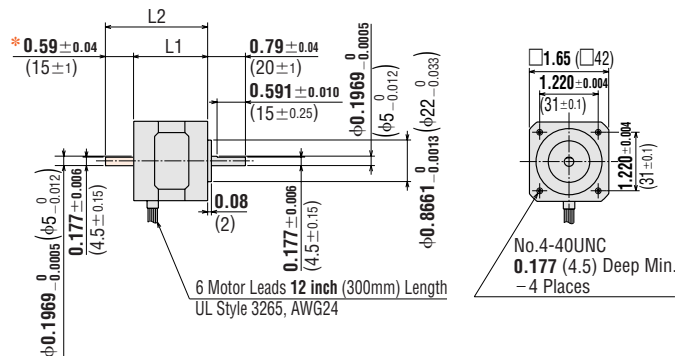
## Specifications

Model	Connection Type	Holding Torque		Current per Phase A/phase	Voltage VDC	Resistance per Phase Ω/phase	Inductance mH/phase	Rotor Inertia J		Lead Wires	Corresponding AC/DC-Input Motor & Driver Package
		oz-in	N·m					oz-in <sup>2</sup>	kg·m <sup>2</sup>		
<b>PK243M-01AA</b>	Bipolar (Series)	28	0.2	0.67	5.6	8.4	15.2	0.191	35×10 <sup>-7</sup>	6	<b>UMK243M□A/ CSK243M-□TA</b>
<b>PK243M-01BA</b>	Unipolar	22	0.16	0.95	4	4.2	3.8				
<b>PK243M-02AA</b>	Bipolar (Series)	28	0.2	0.42	8.4	20	38.8	0.191	35×10 <sup>-7</sup>	6	—
<b>PK243M-02BA</b>	Unipolar	22	0.16	0.6	6	10	9.7				
<b>PK243M-03AA</b>	Bipolar (Series)	28	0.2	0.22	17	77	136	0.191	35×10 <sup>-7</sup>	6	—
<b>PK243M-03BA</b>	Unipolar	22	0.16	0.31	12	38.5	34				
<b>PK244M-01AA</b>	Bipolar (Series)	44	0.31	0.85	5.6	6.6	17.2	0.3	54×10 <sup>-7</sup>	6	<b>UMK244M□A/ CSK244M-□TA</b>
<b>PK244M-01BA</b>	Unipolar	36	0.26	1.2	4	3.3	4.3				
<b>PK244M-02AA</b>	Bipolar (Series)	44	0.31	0.57	8.6	15	38.8	0.3	54×10 <sup>-7</sup>	6	—
<b>PK244M-02BA</b>	Unipolar	36	0.26	0.8	6	7.5	9.7				
<b>PK244M-03AA</b>	Bipolar (Series)	44	0.31	0.28	17	60	152	0.3	54×10 <sup>-7</sup>	6	—
<b>PK244M-03BA</b>	Unipolar	36	0.26	0.4	12	30	38				
<b>PK245M-01AA</b>	Bipolar (Series)	53	0.38	0.85	5.6	6.6	15.6	0.37	68×10 <sup>-7</sup>	6	<b>UMK245M□A/ CSK245M-□TA</b>
<b>PK245M-01BA</b>	Unipolar	45	0.32	1.2	4	3.3	3.9				
<b>PK245M-02AA</b>	Bipolar (Series)	53	0.38	0.57	8.6	15	39.6	0.37	68×10 <sup>-7</sup>	6	—
<b>PK245M-02BA</b>	Unipolar	45	0.32	0.8	6	7.5	9.9				
<b>PK245M-03AA</b>	Bipolar (Series)	53	0.38	0.28	17	60	128	0.37	68×10 <sup>-7</sup>	6	—
<b>PK245M-03BA</b>	Unipolar	45	0.32	0.4	12	30	32				

How to Read Specifications → Page C-9

Motor Wiring Diagrams → Page C-189

## Dimensions Scale 1/4, Unit = inch (mm)



- \* The length of machining on double shaft model is  $0.591 \pm 0.010$  (15±0.25).
- These dimensions are for double shaft models. For single shaft models, ignore the shaded area.

Model	L1 inch (mm)	L2 inch (mm)	Weight lb. (kg)	DXF
<b>PK243M-0□AA</b>	1.30 (33)	—	0.53 (0.24)	B081U
<b>PK243M-0□BA</b>		1.89 (48)		
<b>PK244M-0□AA</b>	1.54 (39)	—	0.66 (0.3)	B082U
<b>PK244M-0□BA</b>		2.13 (54)		
<b>PK245M-0□AA</b>	1.85 (47)	—	0.81 (0.37)	B083U
<b>PK245M-0□BA</b>		2.44 (62)		

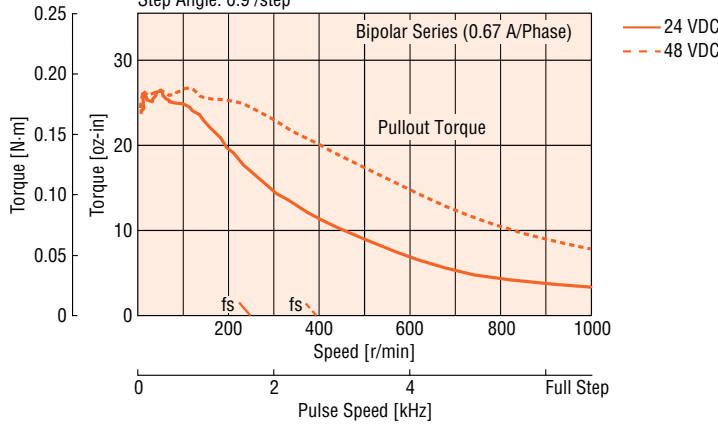
- Enter the winding specification in the box (□) within the model number.

# Speed-Torque Characteristics

How to Read Speed-Torque Characteristics → Page C-10

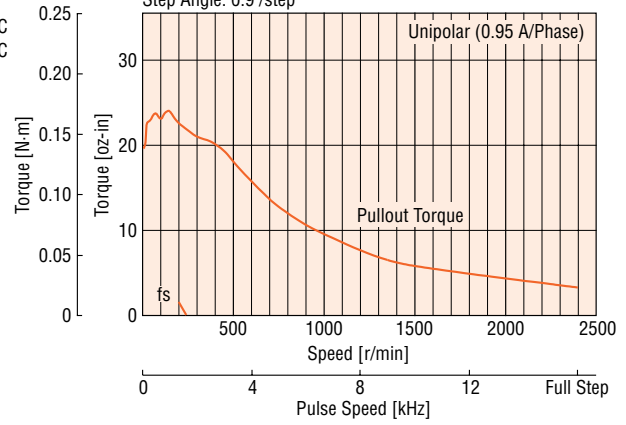
## PK243M-01BA Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 0.9°/step



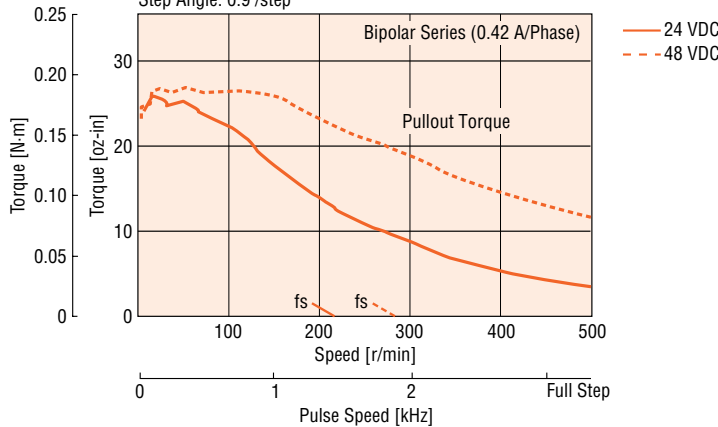
## PK243M-01BA Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 0.9°/step



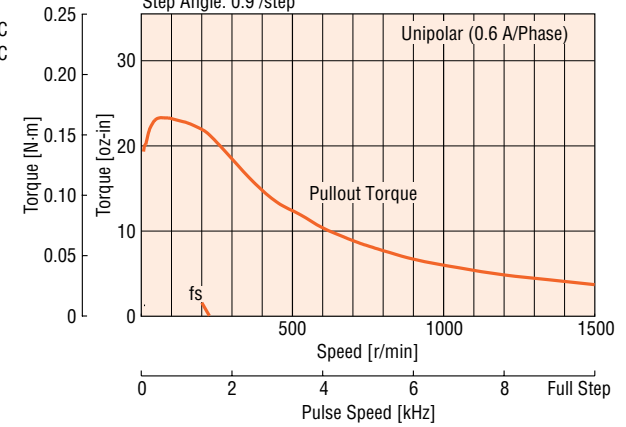
## PK243M-02BA Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 0.9°/step



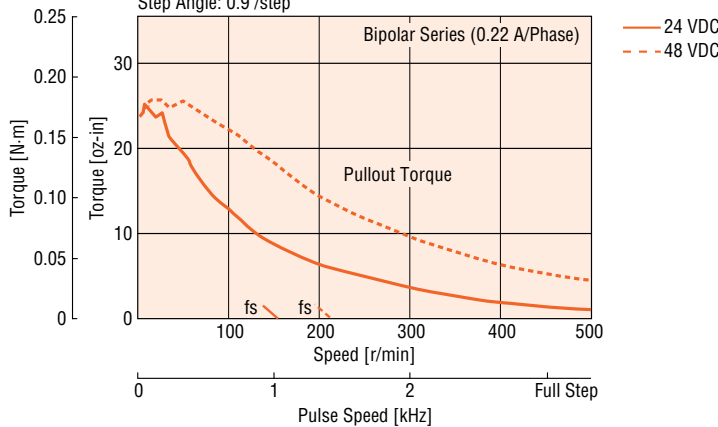
## PK243M-02BA Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 0.9°/step



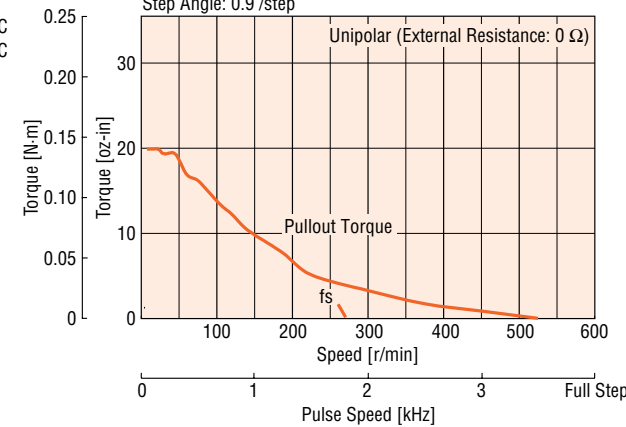
## PK243M-03BA Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 0.9°/step



## PK243M-03BA Unipolar

Power Input: 13.5 VDC Unipolar Constant Voltage Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 0.9°/step

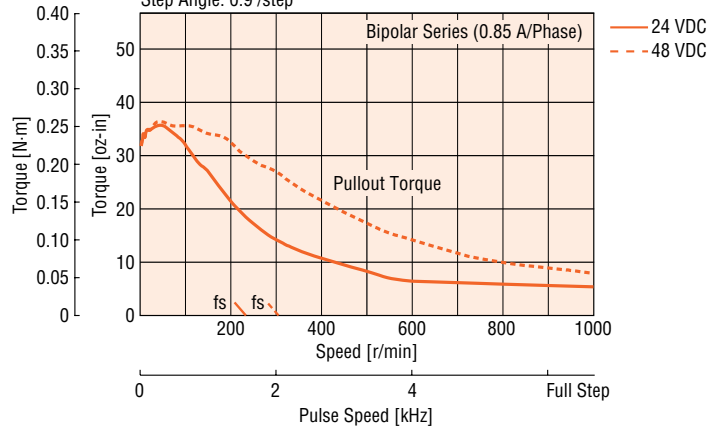


## Speed-Torque Characteristics

How to Read Speed-Torque Characteristics → Page C-10

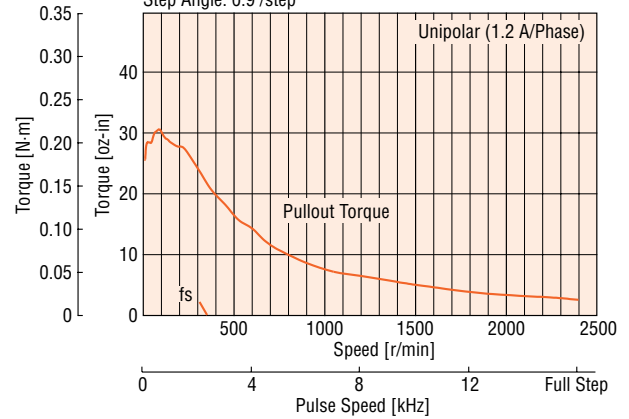
### PK244M-01BA Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



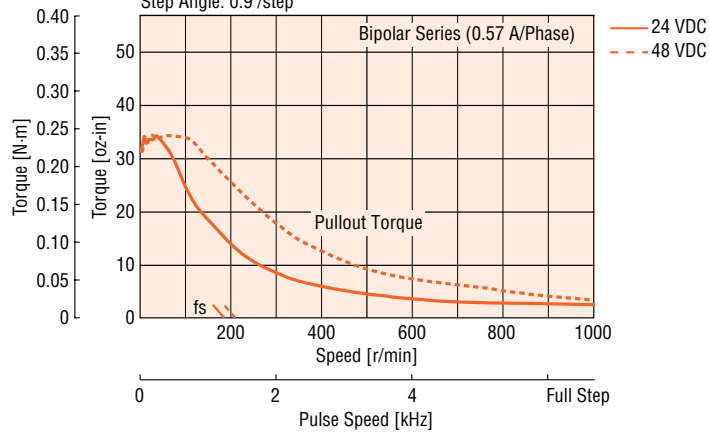
### PK244M-01BA Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



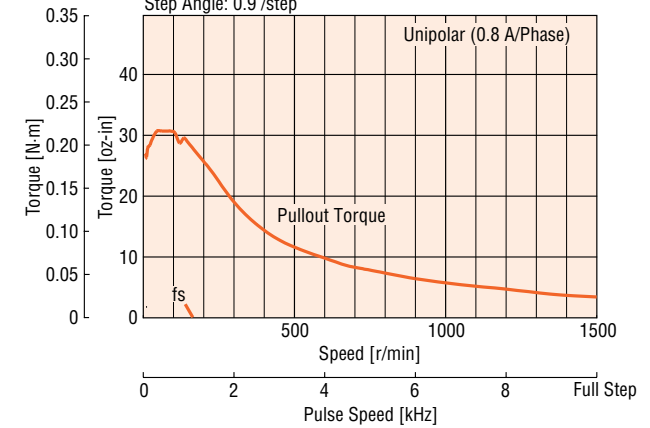
### PK244M-02BA Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



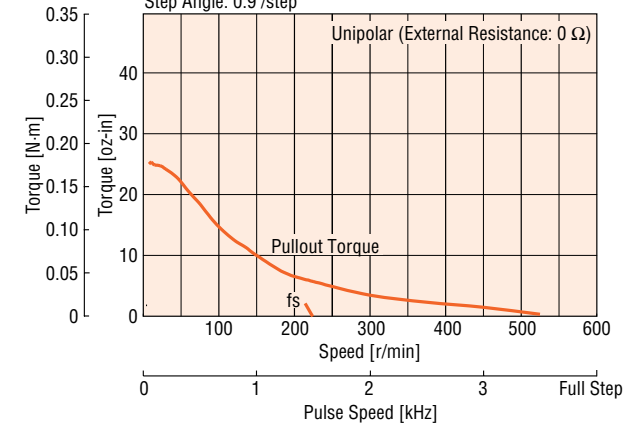
### PK244M-02BA Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



### PK244M-03BA Unipolar

Power Input: 13.5 VDC Unipolar Constant Voltage Driver  
With Damper **D4CL-5.0F**:  $J_L = 0.186 \text{ oz-in}^2 (34 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$





# 1.65 in. (42 mm)

## PK Series SH Geared Type



### Specifications

#### Motor Specifications

Model	Connection Type	Current per Phase	Voltage	Resistance per Phase	Inductance	Rotor Inertia J		Lead Wires	Corresponding DC-Input Motor & Driver Package
						oz-in <sup>2</sup>	kg-m <sup>2</sup>		
PK243A1A-SG□	Bipolar (Series)	0.67	5.6	8.4	10	0.191	35×10 <sup>-7</sup>	6	CSK243□TA-SG□
PK243B1A-SG□	Unipolar	0.95	4.0	4.2	2.5				
PK243A2A-SG□	Bipolar (Series)	0.28	13	48	60	0.191	35×10 <sup>-7</sup>	6	—
PK243B2A-SG□	Unipolar	0.4	9.6	24	15				

How to Read Specifications → Page C-9

Motor Wiring Diagrams → Page C-189

Enter the gear ratio in the box (□) within the model number.

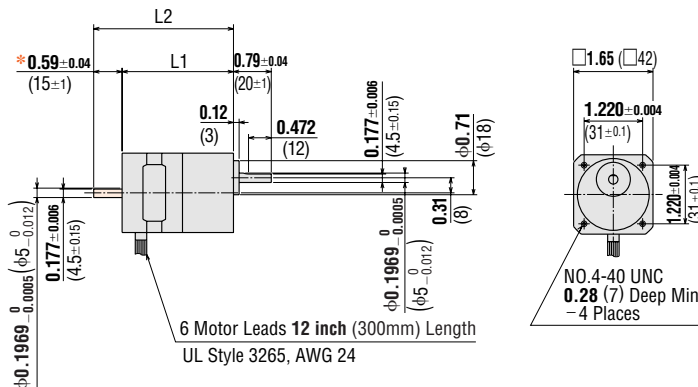
#### Gearmotor Specifications

Model	Gear Ratio	Holding Torque*		Step Angle	Permissible Speed
		lb-in	N-m		
PK243A1A-SG3.6, PK243A2A-SG3.6 PK243B1A-SG3.6, PK243B2A-SG3.6	3.6:1	1.77	0.2	0.5°	500
PK243A1A-SG7.2, PK243A2A-SG7.2 PK243B1A-SG7.2, PK243B2A-SG7.2	7.2:1	3.5	0.4	0.25°	250
PK243A1A-SG9, PK243A2A-SG9 PK243B1A-SG9, PK243B2A-SG9	9:1	4.4	0.5	0.2°	200
PK243A1A-SG10, PK243A2A-SG10 PK243B1A-SG10, PK243B2A-SG10	10:1	4.9	0.56	0.18°	180
PK243A1A-SG18, PK243A2A-SG18 PK243B1A-SG18, PK243B2A-SG18	18:1	7.0	0.8	0.1°	100
PK243A1A-SG36, PK243A2A-SG36 PK243B1A-SG36, PK243B2A-SG36	36:1	7.0	0.8	0.05°	50

\* Holding torque is the same regardless of the connection type, due to the permissible torque limit of the gearhead.

### Dimensions

Scale 1/4, Unit = inch (mm)



\* The length of machining on double shaft model is 0.591±0.010 (15±0.25).

These dimensions are for double shaft models. For single shaft models, ignore the shaded area.

Model	L1 inch (mm)	L2 inch (mm)	Weight lb. (kg)	DXF
PK243A□A-SG□	2.32 (59)	—	0.77 (0.35)	B091U
PK243B□A-SG□		2.91 (74)		

Enter the winding specification in the box (□) within the model number.

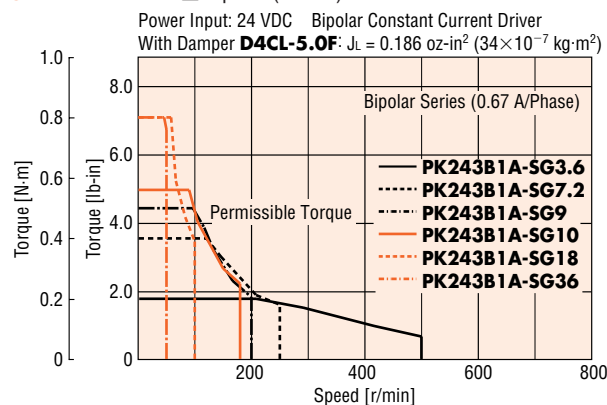
Enter the gear ratio in the box (□) within the model number.

**Mounting Screws (included)**  
No.4-40 UNC 0.39 in. (10 mm)

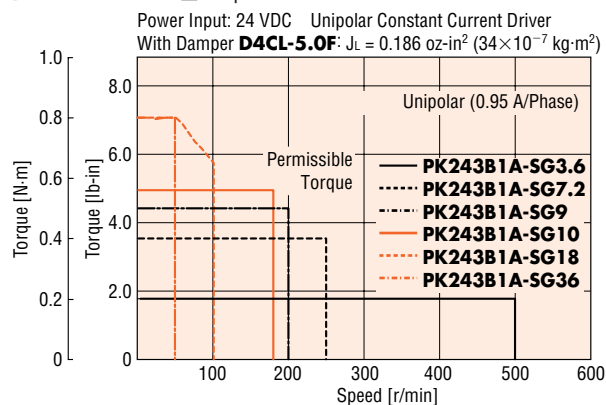
## Speed-Torque Characteristics

How to Read Speed-Torque Characteristics → Page C-10

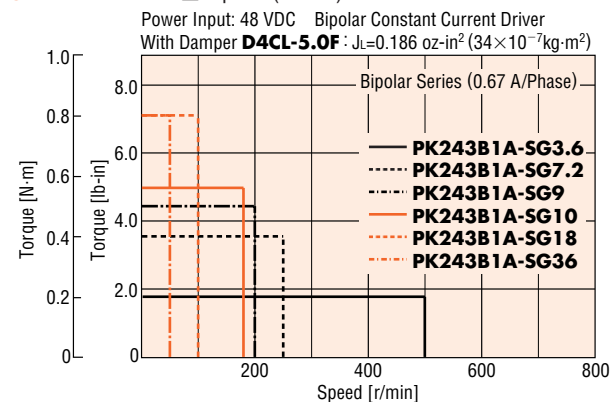
### ● PK243B1A-SG □ Bipolar (Series) 24 VDC



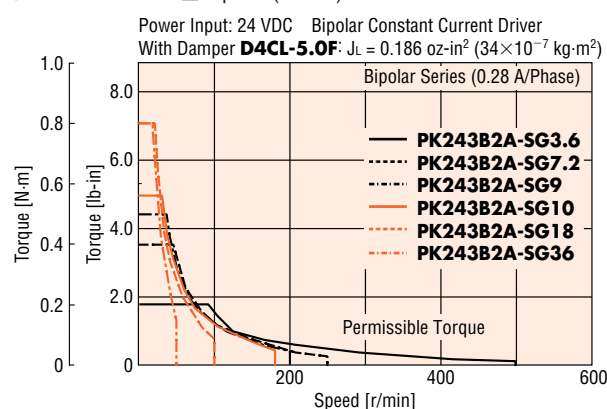
### ● PK243B1A-SG □ Unipolar



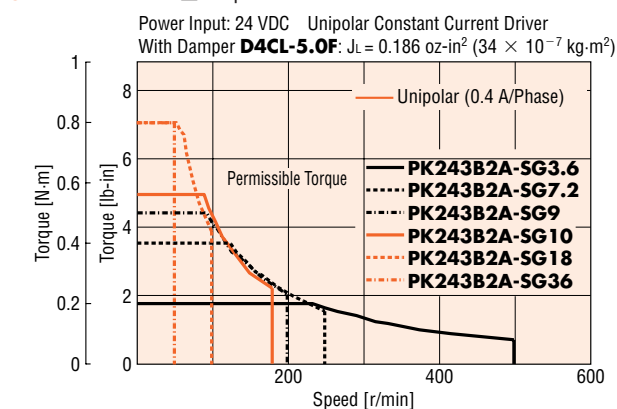
### ● PK243B1A-SG □ Bipolar (Series) 48 VDC



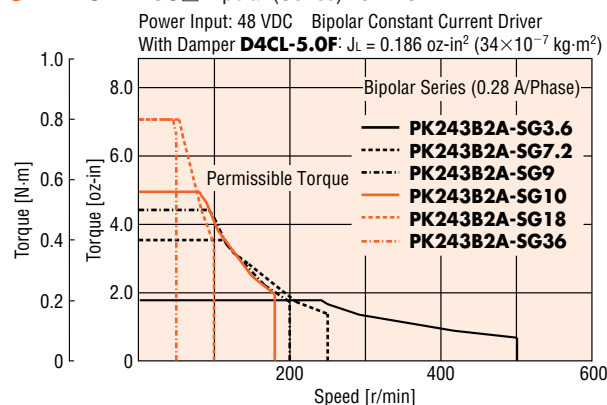
### ● PK243B2A-SG □ Bipolar (Series) 24 VDC



### ● PK243B2A-SG □ Unipolar



### ● PK243B2A-SG □ Bipolar (Series) 48 VDC



Introduction	Motor & Driver Packages										2-Phase Stepping Motors	Driver	Controllers	Low-Speed Synchronous Motors	Accessories		
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV						PK	UI2120G
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Before Using a Stepping Motor

# 2.22 in. (56.4 mm)

## Step Angle 1.8°

### PK Series Standard Type



## Specifications

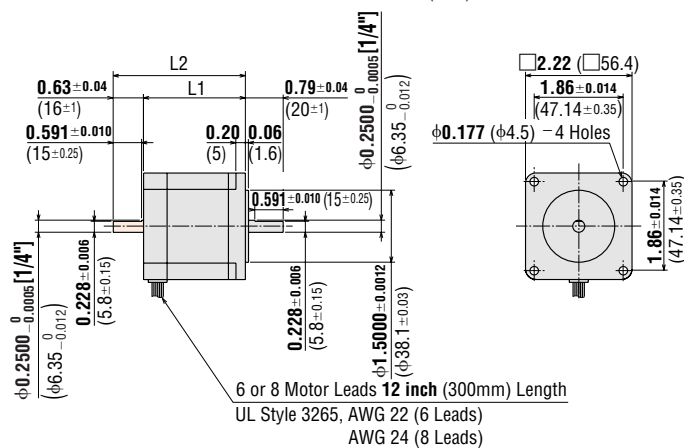
Model	Connection Type	Holding Torque		Current per Phase A/phase	Voltage VDC	Resistance per Phase Ω/phase	Inductance mH/phase	Rotor Inertia J		Lead Wires	Corresponding AC/DC-Input Motor & Driver Package
		oz-in	N·m					oz-in <sup>2</sup>	kg·m <sup>2</sup>		
<b>PK264-01A</b>	Bipolar (Series)	68	0.48	0.71	8.1	11.4	21.6	0.66	120×10 <sup>-7</sup>	6	—
<b>PK264-01B</b>	Unipolar	55	0.39	1	5.7	5.7	5.4				
<b>PK264-02A</b>	Bipolar (Series)	68	0.48	1.4	3.9	2.8	5.6	0.66	120×10 <sup>-7</sup>	6	<b>UMK264□A/ CSK264-□TA</b>
<b>PK264-02B</b>	Unipolar	55	0.39	2	2.8	1.4	1.4				
<b>PK264-03A</b>	Bipolar (Series)	68	0.48	2.1	2.6	1.26	2.4	0.66	120×10 <sup>-7</sup>	6	—
<b>PK264-03B</b>	Unipolar	55	0.39	3	1.9	0.63	0.6				
<b>PK264-E2.0A</b>	Bipolar (Parallel)	68	0.48	2.8	1.96	0.7	1.4	0.66	120×10 <sup>-7</sup>	8	—
<b>PK264-E2.0B</b>	Bipolar (Series)	68	0.48	1.4	3.9	2.8	5.6				
	Unipolar	55	0.39	2	2.8	1.4	1.4				
<b>PK266-01A</b>	Bipolar (Series)	166	1.17	0.71	11	14.8	40	1.64	300×10 <sup>-7</sup>	6	—
<b>PK266-01B</b>	Unipolar	127	0.9	1	7.4	7.4	10				
<b>PK266-02A</b>	Bipolar (Series)	166	1.17	1.4	5	3.6	10	1.64	300×10 <sup>-7</sup>	6	<b>UMK266□A/ CSK266-□TA</b>
<b>PK266-02B</b>	Unipolar	127	0.9	2	3.6	1.8	2.5				
<b>PK266-03A</b>	Bipolar (Series)	166	1.17	2.1	3.2	1.5	4.4	1.64	300×10 <sup>-7</sup>	6	—
<b>PK266-03B</b>	Unipolar	127	0.9	3	2.3	0.75	1.1				
<b>PK266-E2.0A</b>	Bipolar (Parallel)	166	1.17	2.8	2.52	0.9	2.5	1.64	300×10 <sup>-7</sup>	8	—
<b>PK266-E2.0B</b>	Bipolar (Series)	166	1.17	1.4	5	3.6	10				
	Unipolar	127	0.9	2	3.6	1.8	2.5				
<b>PK268-01A</b>	Bipolar (Series)	240	1.75	0.71	12	17.2	56	2.6	480×10 <sup>-7</sup>	6	—
<b>PK268-01B</b>	Unipolar	191	1.35	1	8.6	8.6	14				
<b>PK268-02A</b>	Bipolar (Series)	240	1.75	1.4	6.3	4.5	14.4	2.6	480×10 <sup>-7</sup>	6	<b>UMK268□A/ CSK268-□TA</b>
<b>PK268-02B</b>	Unipolar	191	1.35	2	4.5	2.25	3.6				
<b>PK268-03A</b>	Bipolar (Series)	240	1.75	2.1	4.2	2	6.4	2.6	480×10 <sup>-7</sup>	6	—
<b>PK268-03B</b>	Unipolar	191	1.35	3	3	1	1.6				
<b>PK268-E2.0A</b>	Bipolar (Parallel)	240	1.75	2.8	3.16	1.13	3.6	2.6	480×10 <sup>-7</sup>	8	—
<b>PK268-E2.0B</b>	Bipolar (Series)	240	1.75	1.4	6.3	4.5	14.4				
	Unipolar	191	1.35	2	4.5	2.25	3.6				

How to Read Specifications → Page C-9

Motor Wiring Diagrams → Page C-189

## Dimensions

Scale 1/4, Unit = inch (mm)



Model	L1 inch (mm)	L2 inch (mm)	Weight lb. (kg)	DXF
<b>PK264-0□A</b> <b>PK264-E2.0A</b>	1.54 (39)	—	0.99 (0.45)	B084
<b>PK264-0□B</b> <b>PK264-E2.0B</b>		2.17 (55)		
<b>PK266-0□A</b> <b>PK266-E2.0A</b>	2.13 (54)	—	1.5 (0.7)	B085
<b>PK266-0□B</b> <b>PK266-E2.0B</b>		2.76 (70)		
<b>PK268-0□A</b> <b>PK268-E2.0A</b>	2.99 (76)	—	2.2 (1)	B086
<b>PK268-0□B</b> <b>PK268-E2.0B</b>		3.62 (92)		

• Enter the winding specification in the box (□) within the model number.

• These dimensions are for double shaft models. For single shaft models, ignore the shaded area.

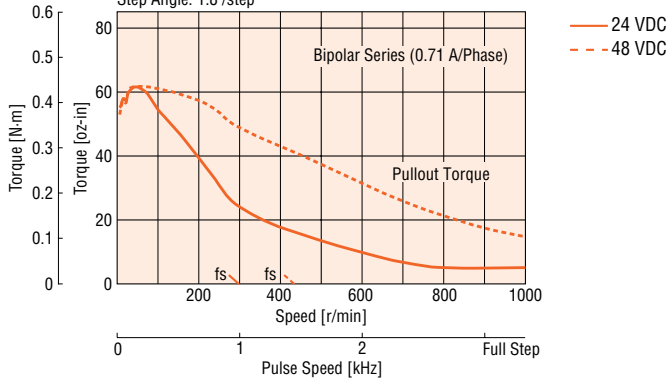


## Speed-Torque Characteristics

How to Read Speed-Torque Characteristics → Page C-10

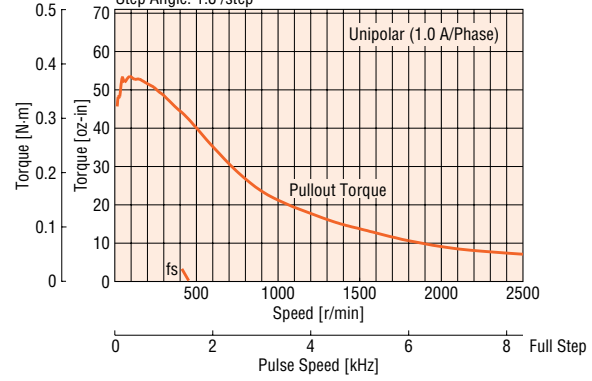
### PK264-01B Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



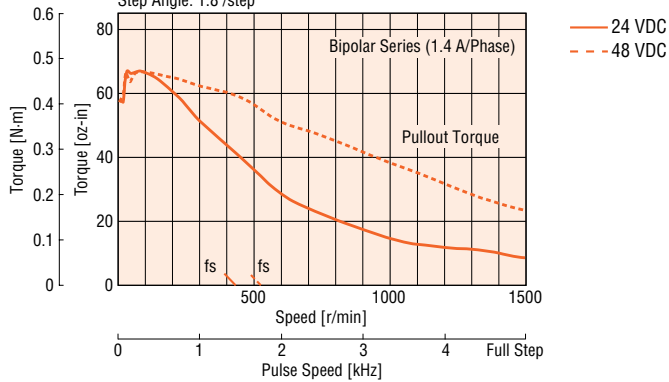
### PK264-01B Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



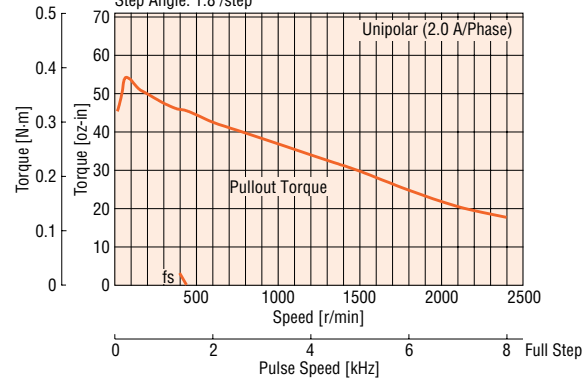
### PK264-02B Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



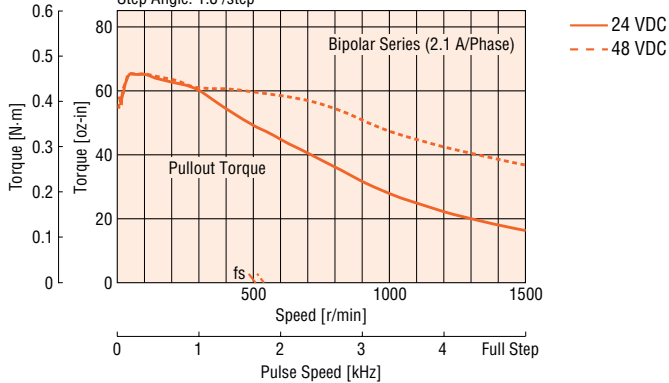
### PK264-02B Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



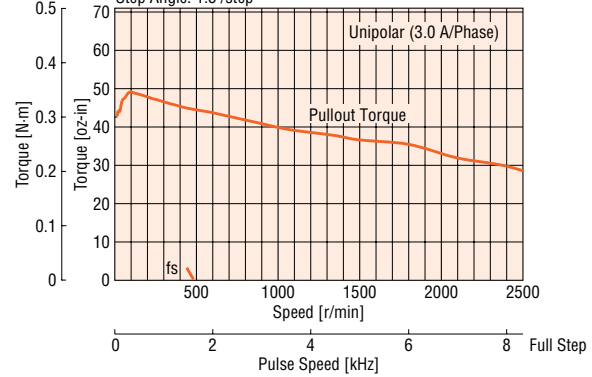
### PK264-03B Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



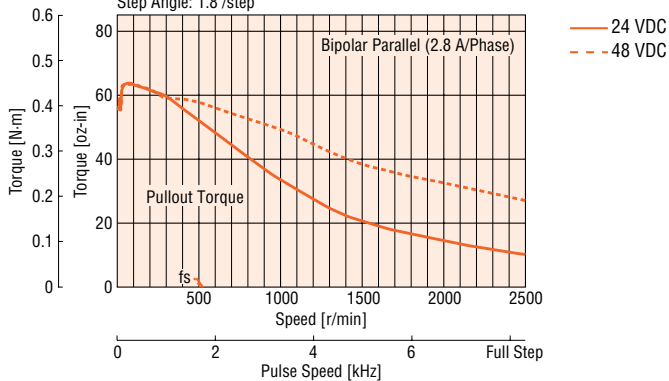
### PK264-03B Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



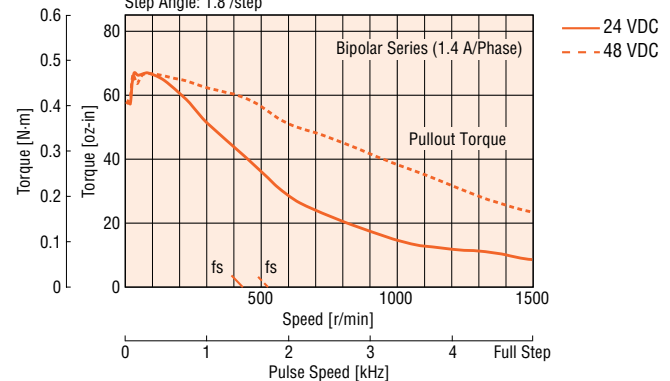
### PK264-E2.0B Bipolar (Parallel)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



### PK264-E2.0B Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



Introduction

AS

AS PLUS

ASC

RK

CRK II

CSK

PMC

UMK

CSK

PK/PV

PK

UI2120G

EMP401

EMP402

SG8030J

SMK

Accessories

Before Using a Stepping Motor

Controllers

Low-Speed Synchronous Motors

Accessories

Before Using a Stepping Motor

Accessories

Before Using a Stepping Motor

Accessories

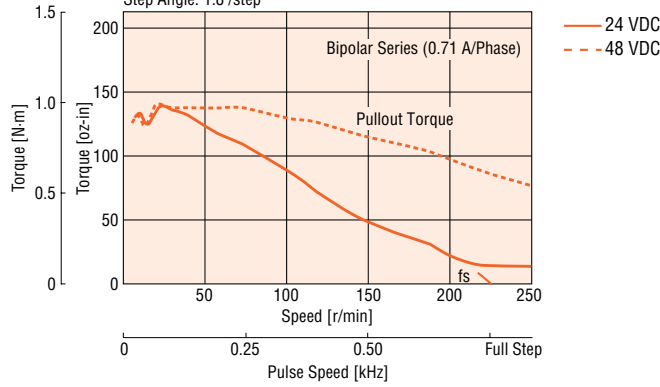
Before Using a Stepping Motor

# Speed-Torque Characteristics

How to Read Speed-Torque Characteristics → Page C-10

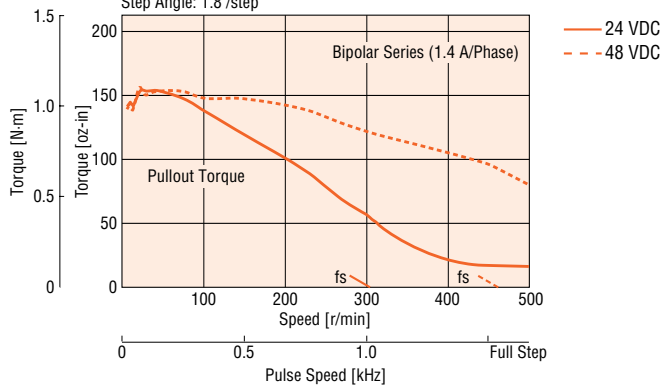
## PK266-01B Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



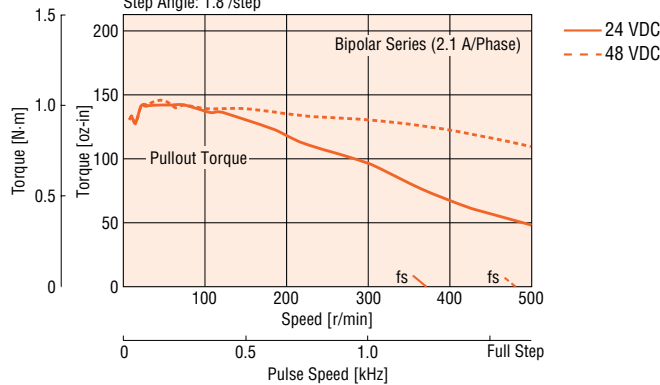
## PK266-02B Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



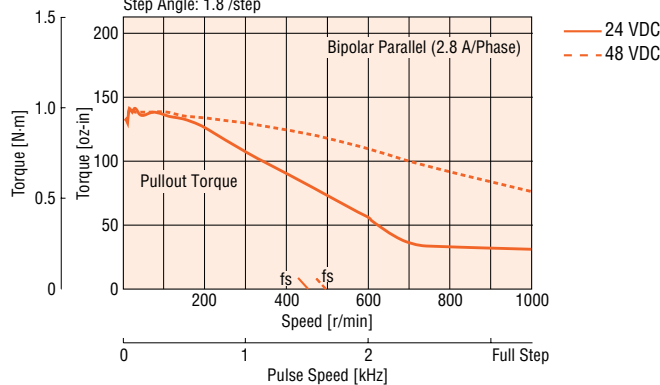
## PK266-03B Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



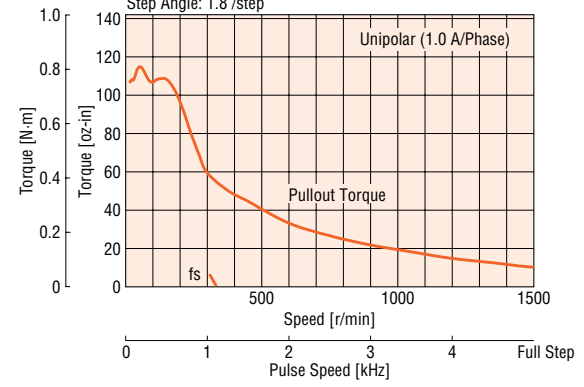
## PK266-E2.0B Bipolar (Parallel)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



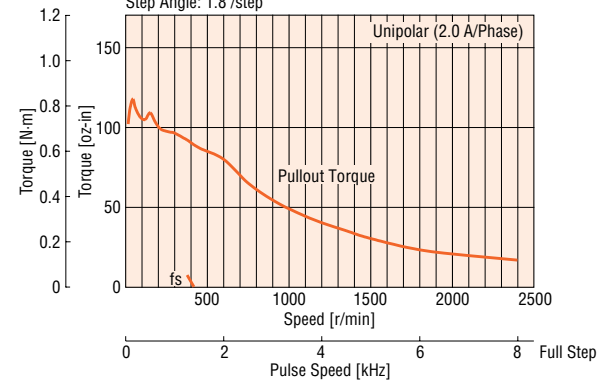
## PK266-01B Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



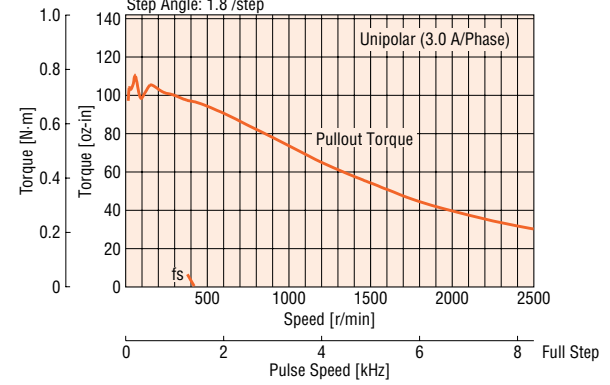
## PK266-02B Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



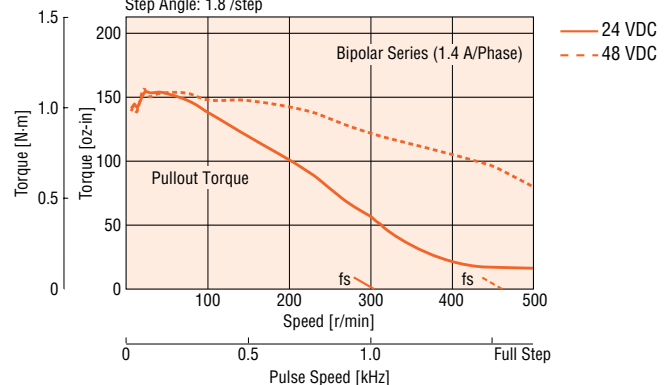
## PK266-03B Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



## PK266-E2.0B Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step





# □ 2.22 in. (□ 56.4 mm)

## Step Angle 0.9°

### PK Series High Resolution Type

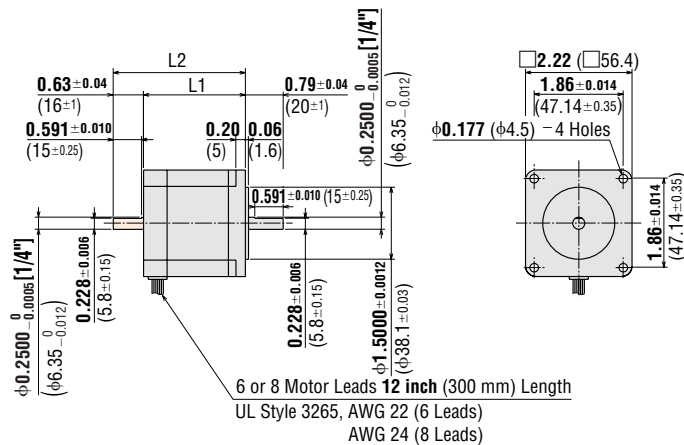


## Specifications

Model	Connection Type	Holding Torque		Current per Phase A/phase	Voltage VDC	Resistance per Phase Ω/phase	Inductance mH/phase	Rotor Inertia J		Lead Wires	Corresponding AC/DC-Input Motor & Driver Package
		oz-in	N·m					oz-in <sup>2</sup>	kg·m <sup>2</sup>		
<b>PK264M-01A</b>	Bipolar (Series)	68	0.48	0.71	8.1	11.4	26	0.66	120×10 <sup>-7</sup>	6	—
<b>PK264M-01B</b>	Unipolar	55	0.39	1	5.7	5.7	6.5				
<b>PK264M-02A</b>	Bipolar (Series)	68	0.48	1.4	3.9	2.8	6.8	0.66	120×10 <sup>-7</sup>	6	<b>UMK264M□A/ CSK264M-□TA</b>
<b>PK264M-02B</b>	Unipolar	55	0.39	2	2.8	1.4	1.7				
<b>PK264M-03A</b>	Bipolar (Series)	68	0.48	2.1	2.6	1.26	3	0.66	120×10 <sup>-7</sup>	6	—
<b>PK264M-03B</b>	Unipolar	55	0.39	3	1.9	0.63	0.75				
<b>PK264M-E2.0A</b>	Bipolar (Parallel)	68	0.48	2.8	1.96	0.7	1.7	0.66	120×10 <sup>-7</sup>	8	—
<b>PK264M-E2.0B</b>	Bipolar (Series)	68	0.48	1.4	3.9	2.8	6.8				
	Unipolar	55	0.39	2	2.8	1.4	1.7				
<b>PK266M-01A</b>	Bipolar (Series)	166	1.17	0.71	11	14.8	50.8	1.64	300×10 <sup>-7</sup>	6	—
<b>PK266M-01B</b>	Unipolar	127	0.9	1	7.4	7.4	12.7				
<b>PK266M-02A</b>	Bipolar (Series)	166	1.17	1.4	5	3.6	12.8	1.64	300×10 <sup>-7</sup>	6	<b>UMK266M□A/ CSK266M-□TA</b>
<b>PK266M-02B</b>	Unipolar	127	0.9	2	3.6	1.8	3.2				
<b>PK266M-03A</b>	Bipolar (Series)	166	1.17	2.1	3.2	1.5	5.8	1.64	300×10 <sup>-7</sup>	6	—
<b>PK266M-03B</b>	Unipolar	127	0.9	3	2.3	0.75	1.45				
<b>PK266M-E2.0A</b>	Bipolar (Parallel)	166	1.17	2.8	2.52	0.9	3.2	1.64	300×10 <sup>-7</sup>	8	—
<b>PK266M-E2.0B</b>	Bipolar (Series)	166	1.17	1.4	5	3.6	12.8				
	Unipolar	127	0.9	2	3.6	1.8	3.2				
<b>PK268M-01A</b>	Bipolar (Series)	240	1.75	0.71	12	17.2	77.6	2.6	480×10 <sup>-7</sup>	6	—
<b>PK268M-01B</b>	Unipolar	191	1.35	1	8.6	8.6	19.4				
<b>PK268M-02A</b>	Bipolar (Series)	240	1.75	1.4	6.3	4.5	19.2	2.6	480×10 <sup>-7</sup>	6	<b>UMK268M□A/ CSK268M-□TA</b>
<b>PK268M-02B</b>	Unipolar	191	1.35	2	4.5	2.25	4.8				
<b>PK268M-03A</b>	Bipolar (Series)	240	1.75	2.1	4.2	2	8.4	2.6	480×10 <sup>-7</sup>	6	—
<b>PK268M-03B</b>	Unipolar	191	1.35	3	3	1	2.1				
<b>PK268M-E2.0A</b>	Bipolar (Parallel)	240	1.75	2.8	3.16	1.13	4.8	2.6	480×10 <sup>-7</sup>	8	—
<b>PK268M-E2.0B</b>	Bipolar (Series)	240	1.75	1.4	6.3	4.5	19.2				
	Unipolar	191	1.35	2	4.5	2.25	4.8				

How to Read Specifications → Page C-9  
Motor Wiring Diagrams → Page C-189

## Dimensions Scale 1/4, Unit = inch (mm)



• These dimensions are for double shaft models. For single shaft models, ignore the shaded area.

Model	L1 inch (mm)	L2 inch (mm)	Weight lb. (kg)	DXF
<b>PK264M-0□A</b> <b>PK264M-E2.0A</b>	1.54 (39)	—	0.99 (0.45)	B084
<b>PK264M-0□B</b> <b>PK264M-E2.0B</b>		2.17 (55)		
<b>PK266M-0□A</b> <b>PK266M-E2.0A</b>	2.13 (54)	—	1.54 (0.7)	B085
<b>PK266M-0□B</b> <b>PK266M-E2.0B</b>		2.76 (70)		
<b>PK268M-0□A</b> <b>PK268M-E2.0A</b>	2.99 (76)	—	2.2 (1)	B086
<b>PK268M-0□B</b> <b>PK268M-E2.0B</b>		3.62 (92)		

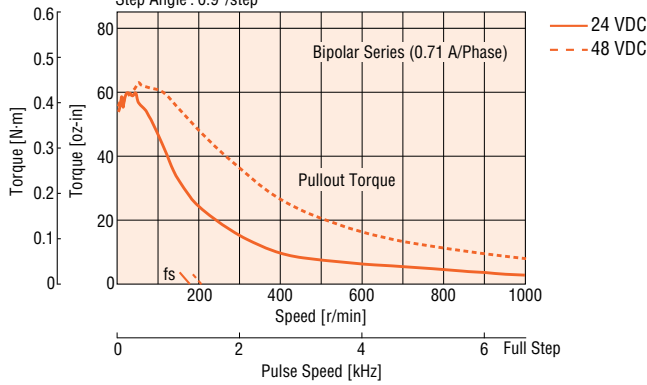
• Enter the winding specification in the box (□) within the model number.

# Speed-Torque Characteristics

How to Read Speed-Torque Characteristics → Page C-10

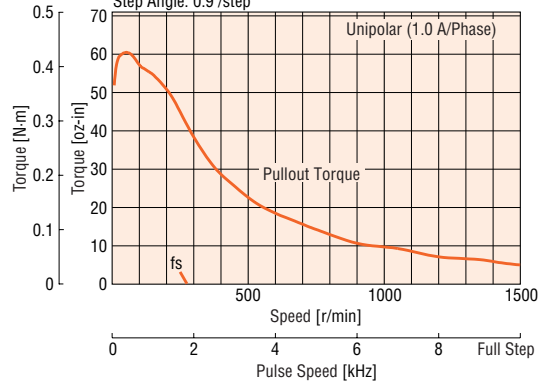
## ● PK264M-01B Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



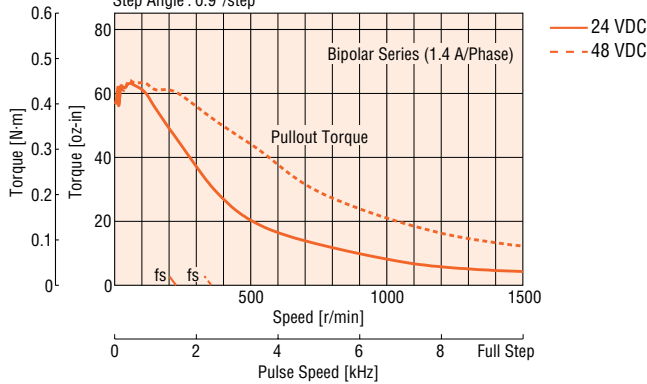
## ● PK264M-01B Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



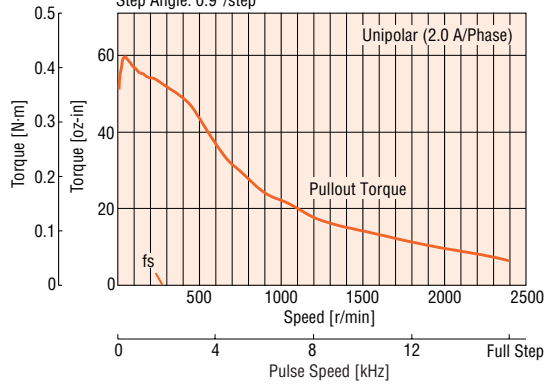
## ● PK264M-02B Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



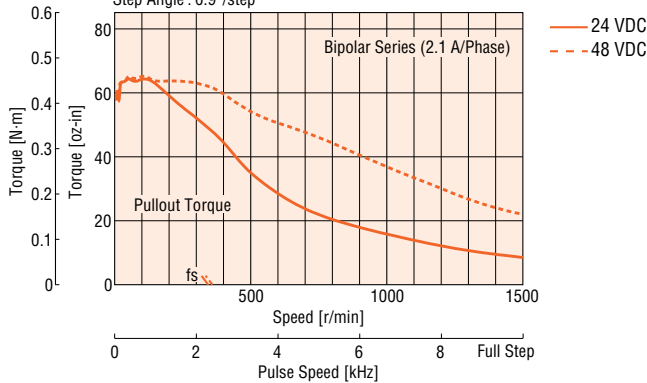
## ● PK264M-02B Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



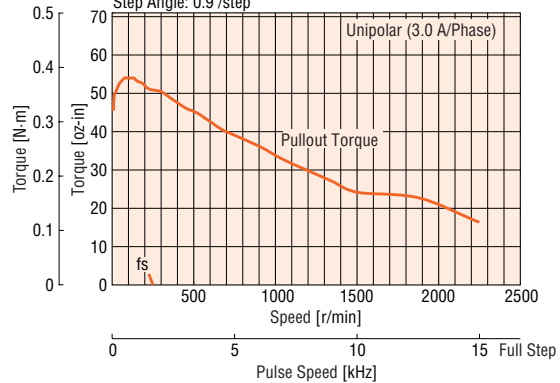
## ● PK264M-03B Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



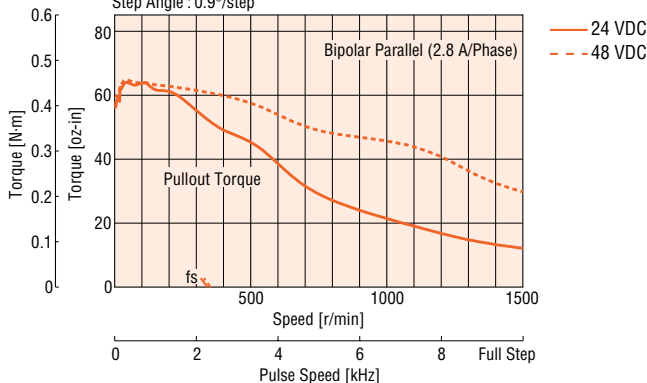
## ● PK264M-03B Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



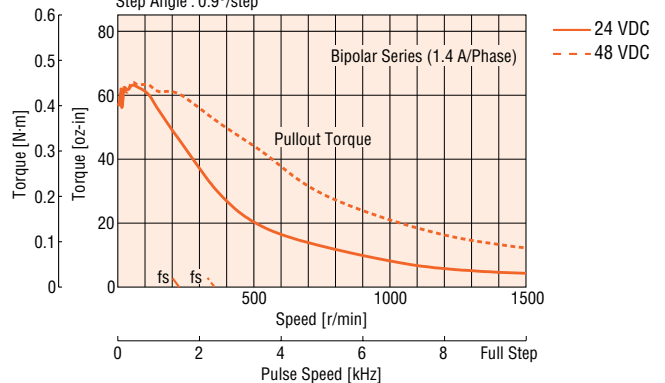
## ● PK264M-E2.0B Bipolar (Parallel)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



## ● PK264M-E2.0B Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



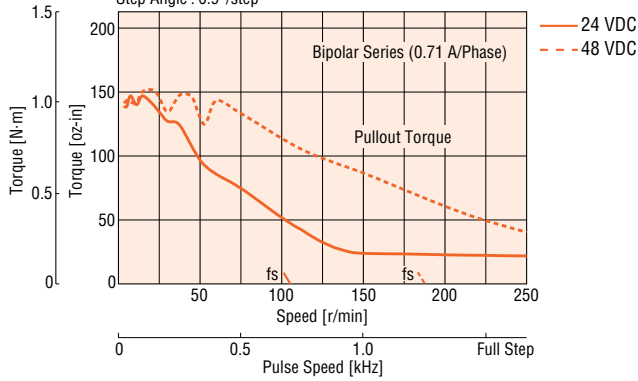
Introduction	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor

## Speed-Torque Characteristics

How to Read Speed-Torque Characteristics → Page C-10

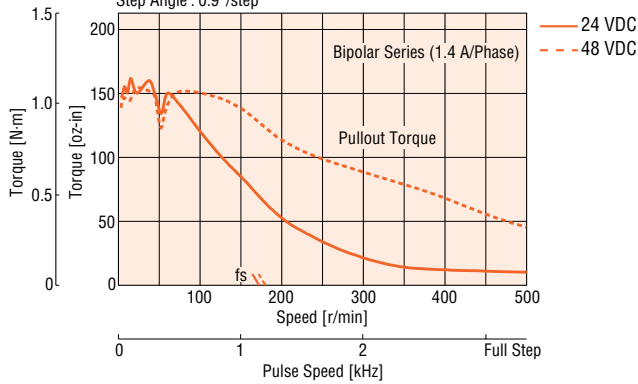
### PK266M-01B Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



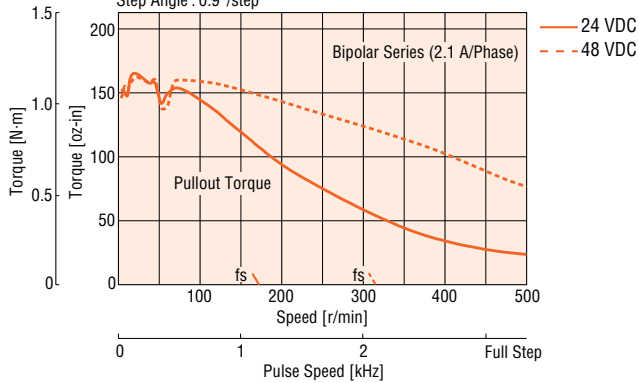
### PK266M-02B Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



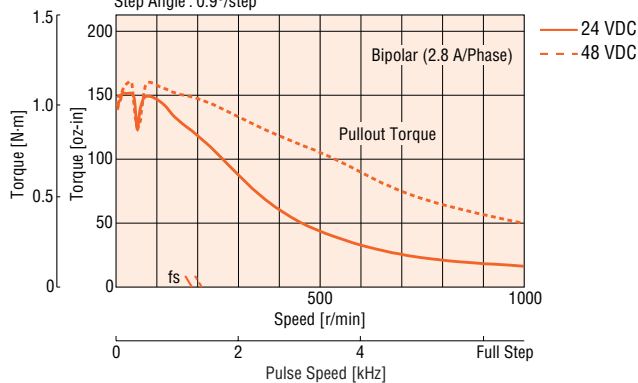
### PK266M-03B Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



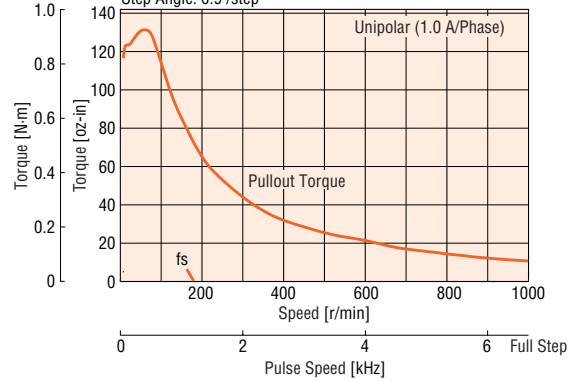
### PK266M-E2.0B Bipolar (Parallel)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



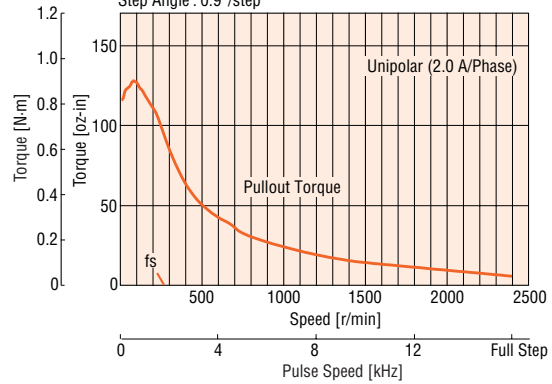
### PK266M-01B Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



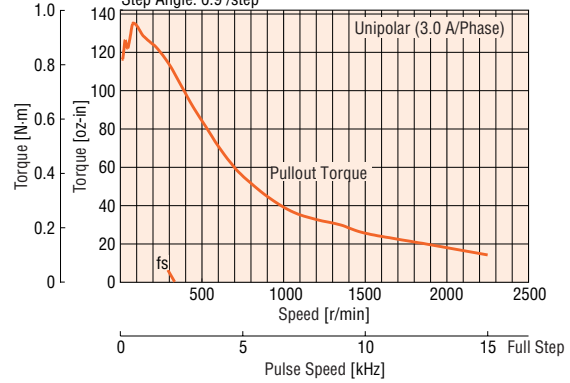
### PK266M-02B Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



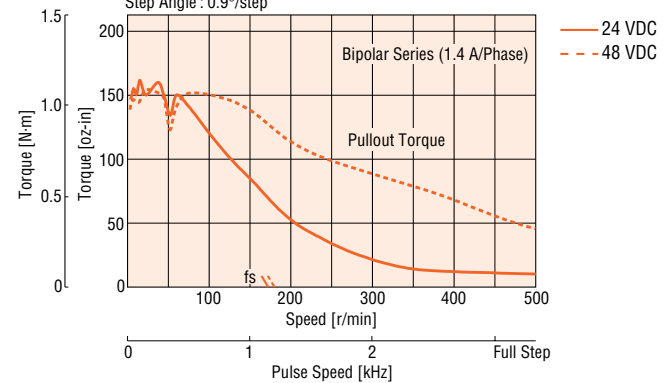
### PK266M-03B Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



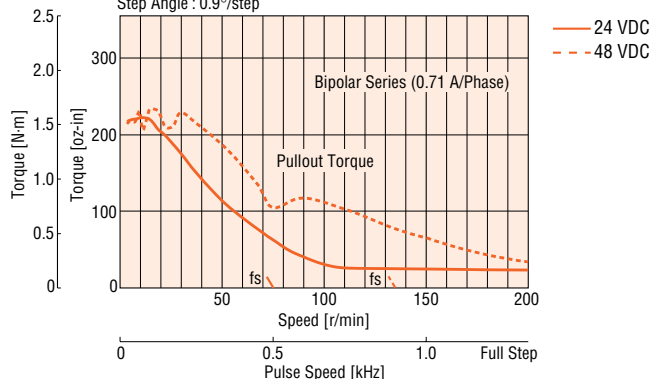
### PK266M-E2.0B Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



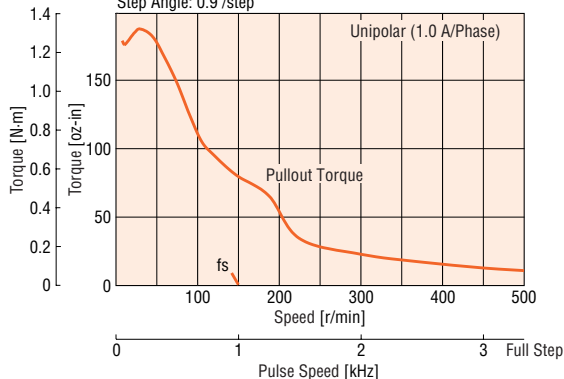
### PK268M-01B Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



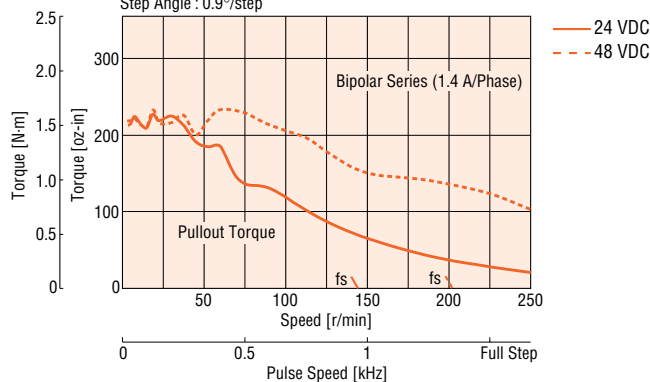
### PK268M-01B Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



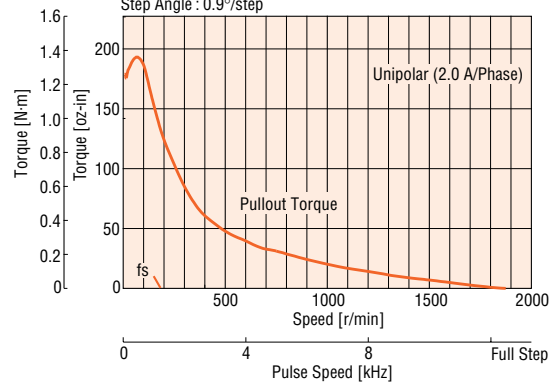
### PK268M-02B Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



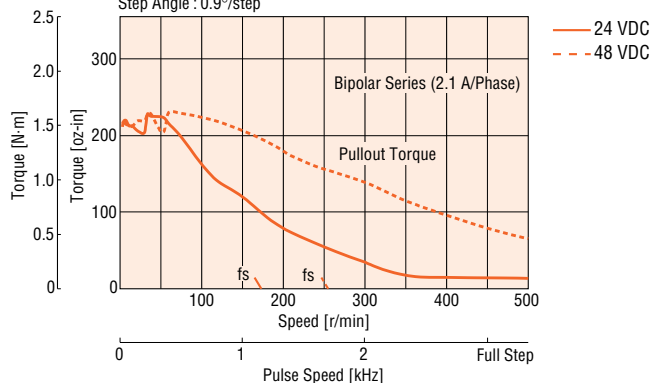
### PK268M-02B Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



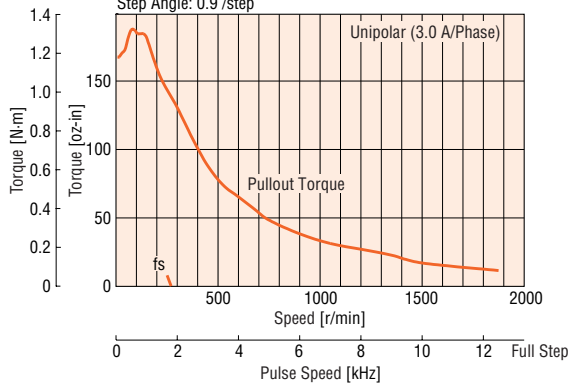
### PK268M-03B Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



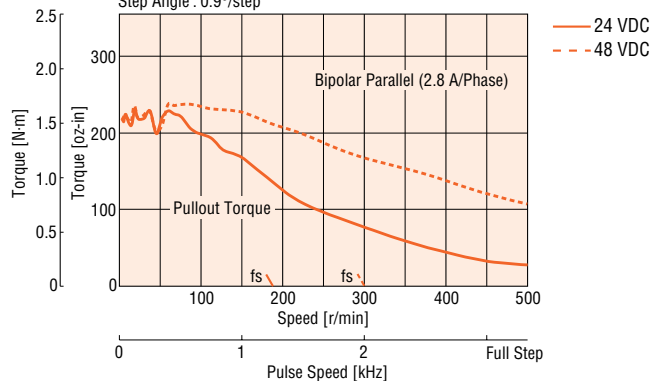
### PK268M-03B Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



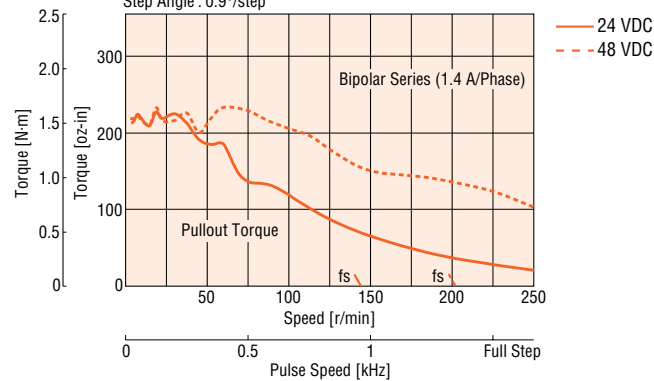
### PK268M-E2.0B Bipolar (Parallel)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



### PK268M-E2.0B Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D6CL-6.3 F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



Introduction		Motor & Driver Packages										2-Phase Stepping Motors		Controllers								
AS	AS PLUS	Closed Loop $Q_{572P}$	DC Input	5-Phase Microstep	AC Input	DC Input	5-Phase Full/Half	DC Input	2-Phase Full/Half	AC Input	DC Input	without Encoder	PK/P/V	with Encoder	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor

# □ 2.36 in. (□ 60 mm)

## PK Series SH Geared Type



### Specifications

#### Motor Specifications

Model Single Shaft Double Shaft	Connection Type	Current per Phase A/phase	Voltage VDC	Resistance per Phase Ω/phase	Inductance mH/phase	Rotor Inertia J		Lead Wires	Corresponding DC-Input Motor & Driver Package
						oz-in <sup>2</sup>	kg-m <sup>2</sup>		
<b>PK264A1A-SG</b> □	Bipolar (Series)	0.71	8.1	11.4	21.6	0.66	120×10 <sup>-7</sup>	6	—
<b>PK264B1A-SG</b> □	Unipolar	1	5.7	5.7	5.4				
<b>PK264A2A-SG</b> □	Bipolar (Series)	1.4	3.9	2.8	5.6	0.66	120×10 <sup>-7</sup>	6	<b>CSK264</b> □ <b>TA-SG</b> □
<b>PK264B2A-SG</b> □	Unipolar	2	2.8	1.4	1.4				

How to Read Specifications → Page C-9

Motor Wiring Diagrams → Page C-189

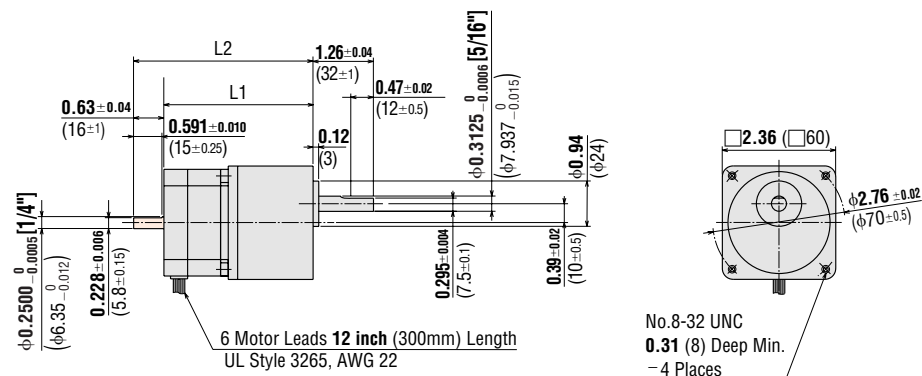
• Enter the gear ratio in the box (□) within the model number.

#### Gearmotor Specifications

Model Single Shaft Double Shaft	Gear Ratio	Holding Torque*		Step Angle	Permissible Speed
		lb-in	N-m		
<b>PK264A1A-SG3.6</b> , <b>PK264A2A-SG3.6</b> <b>PK264B1A-SG3.6</b> , <b>PK264B2A-SG3.6</b>	3.6:1	8.8	1	0.5°	500
<b>PK264A1A-SG7.2</b> , <b>PK264A2A-SG7.2</b> <b>PK264B1A-SG7.2</b> , <b>PK264B2A-SG7.2</b>	7.2:1	17.7	2	0.25°	250
<b>PK264A1A-SG9</b> , <b>PK264A2A-SG9</b> <b>PK264B1A-SG9</b> , <b>PK264B2A-SG9</b>	9:1	22	2.5	0.2°	200
<b>PK264A1A-SG10</b> , <b>PK264A2A-SG10</b> <b>PK264B1A-SG10</b> , <b>PK264B2A-SG10</b>	10:1	23	2.7	0.18°	180
<b>PK264A1A-SG18</b> , <b>PK264A2A-SG18</b> <b>PK264B1A-SG18</b> , <b>PK264B2A-SG18</b>	18:1	26	3	0.1°	100
<b>PK264A1A-SG36</b> , <b>PK264A2A-SG36</b> <b>PK264B1A-SG36</b> , <b>PK264B2A-SG36</b>	36:1	35	4	0.05°	50

\* Holding torque is the same regardless of the connection type, due to the permissible torque limit of the gearhead.

### Dimensions Scale 1/4, Unit = inch (mm)



#### Mounting Screws (included)

No.8-32 UNC 0.59 in. (15 mm) length, 4 pieces

• These dimensions are for double shaft models. For single shaft models, ignore the shaded area.

Model	L1 inch (mm)	L2 inch (mm)	Weight lb. (kg)	DXF
<b>PK264A</b> □ <b>A-SG</b> □	3.11 (79)	—	1.7 (0.75)	B092U
<b>PK264B</b> □ <b>A-SG</b> □		3.74 (95)		

• Enter the winding specification in the box (□) within the model number.  
• Enter the gear ratio in the box (□) within the model number.

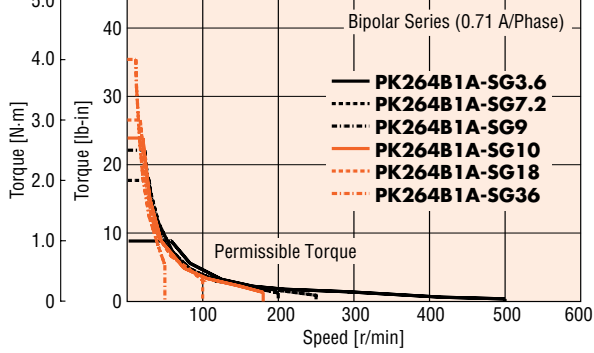


## Speed-Torque Characteristics

How to Read Speed-Torque Characteristics → Page C-10

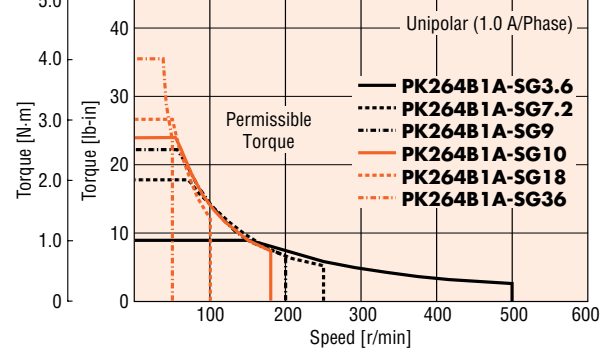
### ● PK264B1A-SG Bipolar (Series) 24 VDC

Power Input: 24 VDC Bipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$



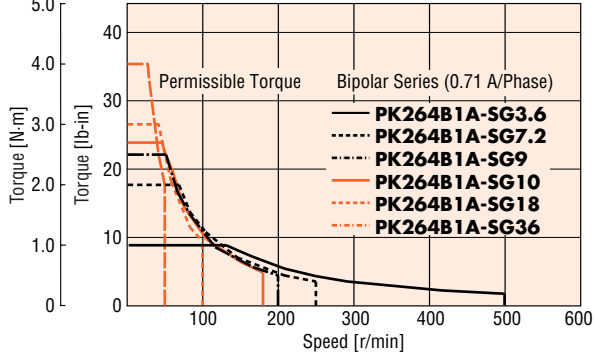
### ● PK264B1A-SG Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$



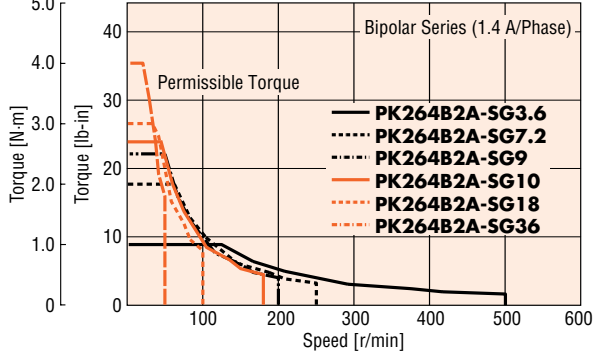
### ● PK264B1A-SG Bipolar (Series) 48 VDC

Power Input: 48 VDC Bipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$



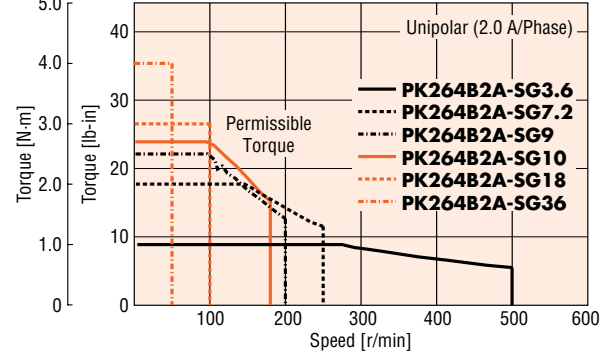
### ● PK264B2A-SG Bipolar (Series) 24 VDC

Power Input: 24 VDC Bipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$



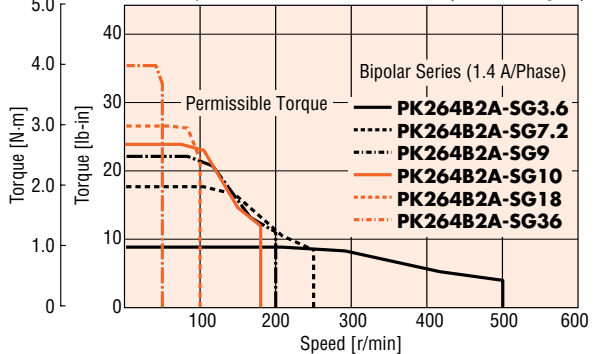
### ● PK264B2A-SG Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$



### ● PK264B2A-SG Bipolar (Series) 48 VDC

Power Input: 48 VDC Bipolar Constant Current Driver  
With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$



Introduction

AS

AS PLUS

ASC

RK

CRK II

CSK

PMC

UMK

CSK

PK/PV

PK

PK/PV

PK

PK

PK

PK

PK

PK

PK

PK

PK

PK

PK

PK

PK

PK

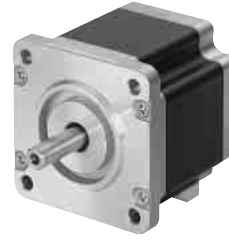
PK

Motor & Driver Packages	
AS	Closed Loop $Q_{STEP}$
AS PLUS	AC Input
ASC	DC Input
RK	5-Phase Microstep
CRK II	DC Input
CSK	5-Phase Full/Half
PMC	DC Input
UMK	2-Phase Full/Half
CSK	AC Input
PK/PV	DC Input
PK	2-Phase Stepping Motors without Encoder
PK	with Encoder
PK	with Indexer
PK	Driver
PK	Controllers
PK	Low-Speed Synchronous Motors
PK	Accessories
PK	Before Using a Stepping Motor

# 2.36 in. (60 mm)

## Step Angle 1.8°

### PV Series (High Inertia Capability)



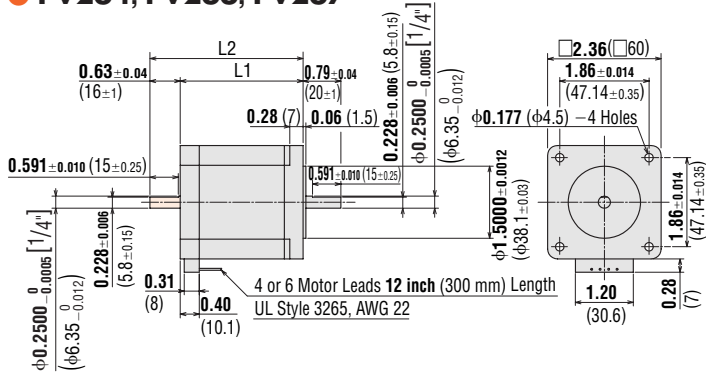
## Specifications

Model	Connection Type	Holding Torque		Current per Phase A/phase	Voltage VDC	Resistance per Phase Ω/phase	Inductance mH/phase	Rotor Inertia J		Lead Wires
		oz-in	N-m					oz-in <sup>2</sup>	kg-m <sup>2</sup>	
<b>PV264-D2.8AA</b> <b>PV264-D2.8BA</b>	Bipolar	150	1.06	2.8	2.1	0.73	1.8	1.53	280×10 <sup>-7</sup>	4
<b>PV264-02AA</b> <b>PV264-02BA</b>	Bipolar (Series) Unipolar	150 106	1.06 0.75	1.4 2	4.1 2.9	2.92 1.46	7.2 1.8	1.53	280×10 <sup>-7</sup>	6
<b>PV266-D2.8AA</b> <b>PV266-D2.8BA</b>	Bipolar	240	1.75	2.8	2.8	1	3.05	2.5	450×10 <sup>-7</sup>	4
<b>PV266-02AA</b> <b>PV266-02BA</b>	Bipolar (Series) Unipolar	240 191	1.75 1.35	1.4 2	5.6 4	4 2	12.2 3.05	2.5	450×10 <sup>-7</sup>	6
<b>PV267-D2.8AA</b> <b>PV267-D2.8BA</b>	Bipolar	310	2.2	2.8	3.4	1.2	3.54	3.1	570×10 <sup>-7</sup>	4
<b>PV267-02AA</b> <b>PV267-02BA</b>	Bipolar (Series) Unipolar	310 240	2.2 1.7	1.4 2	6.7 4.8	4.8 2.4	14.2 3.54	3.1	570×10 <sup>-7</sup>	6
<b>PV269-D2.8AA</b> <b>PV269-D2.8BA</b>	Bipolar	440	3.1	2.8	4.2	1.49	5.7	4.9	900×10 <sup>-7</sup>	4
<b>PV269-02AA</b> <b>PV269-02BA</b>	Bipolar (Series) Unipolar	440 310	3.1 2.2	1.4 2	8.3 6	5.96 2.98	22.8 5.7	4.9	900×10 <sup>-7</sup>	6

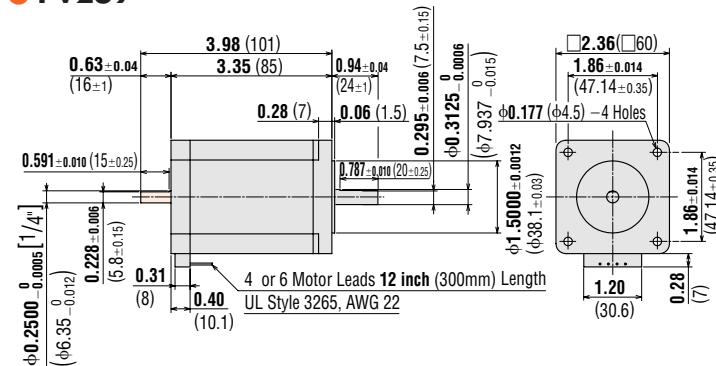
How to Read Specifications → Page C-9  
Motor Wiring Diagrams → Page C-189

## Dimensions Scale 1/4, Unit = inch (mm)

### ● PV264, PV266, PV267



### ● PV269



● These dimensions are for double shaft models. For single shaft models, ignore the shaded area.

Model	L1 inch (mm)	L2 inch (mm)	Weight lb. (kg)	DXF
<b>PV264-D2.8AA</b> <b>PV264-02AA</b>	1.71 (43.5)	—	1.3 (0.6)	B279U
<b>PV264-D2.8BA</b> <b>PV264-02BA</b>		2.34 (59.5)		
<b>PV266-D2.8AA</b> <b>PV266-02AA</b>	2.13 (54)	—	1.8 (0.83)	B232U
<b>PV266-D2.8BA</b> <b>PV266-02BA</b>		2.76 (70)		
<b>PV267-D2.8AA</b> <b>PV267-02AA</b>	2.56 (65)	—	2.2 (1.02)	B813U
<b>PV267-D2.8BA</b> <b>PV267-02BA</b>		3.19 (81)		

Model	Weight lb. (kg)	DXF
<b>PV269-D2.8AA</b> <b>PV269-02AA</b>	3.1 (1.43)	B814U
<b>PV269-D2.8BA</b> <b>PV269-02BA</b>		



□ 1.10 in. (□ 28 mm)

□ 1.38 in. (□ 35 mm)

□ 1.65 in. (□ 42 mm)

□ 2.22 in. (□ 56.4 mm)

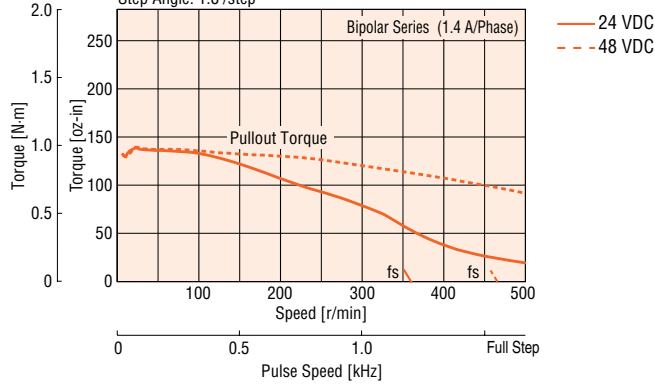
□ 2.36 in. (□ 60 mm)

□ 3.35 in. (□ 85 mm)

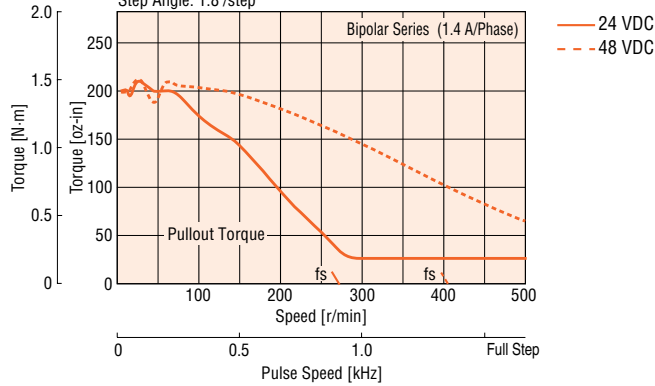
□ 3.54 in. (□ 90 mm)

● **PV264-02BA Bipolar (Series)**

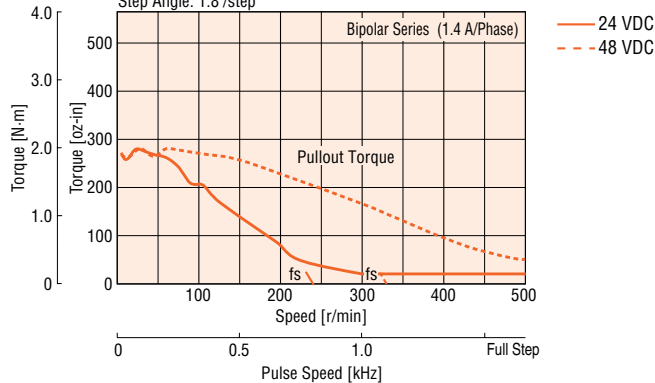
Bipolar Constant Current Driver  
 With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle: 1.8°/step

● **PV266-02BA Bipolar (Series)**

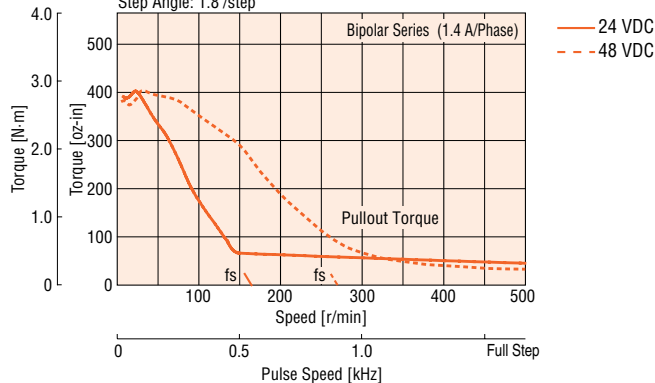
Bipolar Constant Current Driver  
 With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle: 1.8°/step

● **PV267-02BA Bipolar (Series)**

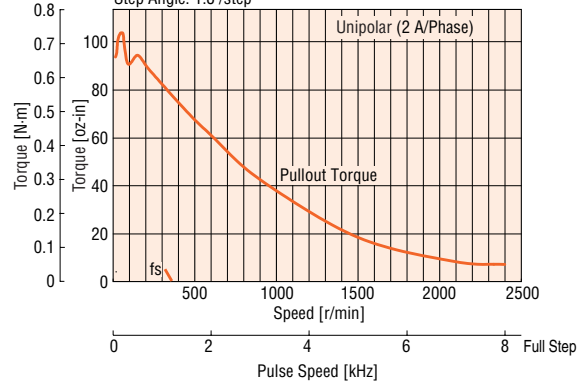
Bipolar Constant Current Driver  
 With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle: 1.8°/step

● **PV269-02BA Bipolar (Series)**

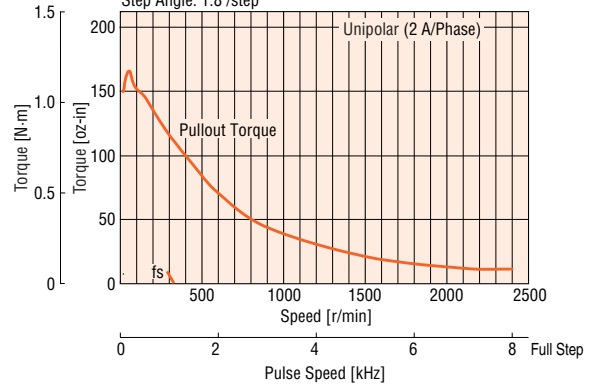
Bipolar Constant Current Driver  
 With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle: 1.8°/step

● **PV264-02BA Unipolar**

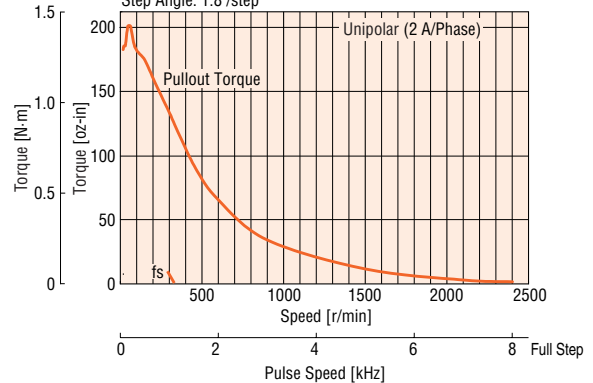
Power Input: 24 VDC Unipolar Constant Current Driver  
 With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle: 1.8°/step

● **PV266-02BA Unipolar**

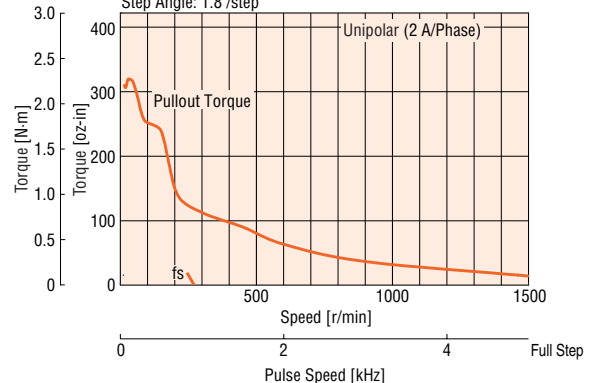
Power Input: 24 VDC Unipolar Constant Current Driver  
 With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle: 1.8°/step

● **PV267-02BA Unipolar**

Power Input: 24 VDC Unipolar Constant Current Driver  
 With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle: 1.8°/step

● **PV269-02BA Unipolar**

Power Input: 24 VDC Unipolar Constant Current Driver  
 With Damper **D6CL-6.3F**:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle: 1.8°/step



# 3.35 in. (85 mm)

## Step Angle 1.8°

### PK Series Standard Type



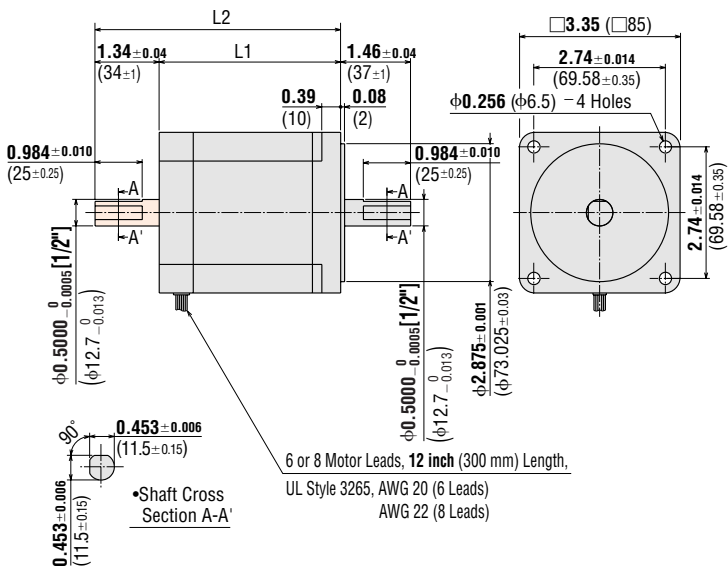
## Specifications

Model	Connection Type	Holding Torque		Current per Phase	Voltage	Resistance per Phase	Inductance	Rotor Inertia J		Lead Wires
		oz-in	N·m					oz-in <sup>2</sup>	kg·m <sup>2</sup>	
PK296-01AA PK296-01BA	Bipolar (Series)	440	3.1	1.4	6.2	4.4	30.8	7.7	1400×10 <sup>-7</sup>	6
	Unipolar	310	2.2	2	4.4	2.2	7.7			
PK296-02AA PK296-02BA	Bipolar (Series)	440	3.1	2.1	4.2	2	14	7.7	1400×10 <sup>-7</sup>	6
	Unipolar	310	2.2	3	3	1	3.5			
PK296-03AA PK296-03BA	Bipolar (Series)	440	3.1	3.18	2.8	0.96	6	7.7	1400×10 <sup>-7</sup>	6
	Unipolar	310	2.2	4.5	2	0.48	1.5			
PK296-F4.5A PK296-F4.5B	Bipolar (Parallel)	440	3.1	6.3	1.4	0.24	1.5	7.7	1400×10 <sup>-7</sup>	8
	Bipolar (Series)	440	3.1	3.18	2.8	0.96	6			
	Unipolar	310	2.2	4.5	2	0.48	1.5			
PK299-01AA PK299-01BA	Bipolar (Series)	880	6.2	1.4	9	6.4	56	14.8	2700×10 <sup>-7</sup>	6
	Unipolar	620	4.4	2	6.4	3.2	14			
PK299-02AA PK299-02BA	Bipolar (Series)	880	6.2	2.1	6	3	24	14.8	2700×10 <sup>-7</sup>	6
	Unipolar	620	4.4	3	4.2	1.5	6			
PK299-03AA PK299-03BA	Bipolar (Series)	880	6.2	3.18	3.9	1.32	10	14.8	2700×10 <sup>-7</sup>	6
	Unipolar	620	4.4	4.5	2.8	0.66	2.5			
PK299-F4.5A PK299-F4.5B	Bipolar (Parallel)	880	6.2	6.3	1.9	0.33	2.5	14.8	2700×10 <sup>-7</sup>	8
	Bipolar (Series)	880	6.2	3.18	3.9	1.32	10			
	Unipolar	620	4.4	4.5	2.8	0.66	2.5			
PK2913-01AA PK2913-01BA	Bipolar (Series)	1320	9.3	1.4	10	7.6	76.8	22	4000×10 <sup>-7</sup>	6
	Unipolar	930	6.6	2	7.6	3.8	19.2			
PK2913-02AA PK2913-02BA	Bipolar (Series)	1320	9.3	2.8	5.3	1.94	16.8	22	4000×10 <sup>-7</sup>	6
	Unipolar	930	6.6	4	3.8	0.97	4.2			
PK2913-F4.0A PK2913-F4.0B	Bipolar (Parallel)	1320	9.3	5.6	2.6	0.49	4.2	22	4000×10 <sup>-7</sup>	8
	Bipolar (Series)	1320	9.3	2.8	5.3	1.94	16.8			
	Unipolar	930	6.6	4	3.8	0.97	4.2			

How to Read Specifications → Page C-9

Motor Wiring Diagrams → Page C-189

## Dimensions Scale 1/4, Unit = inch (mm)



- These dimensions are for double shaft models. For single shaft models, ignore the shaded area.

Model	L1 inch (mm)	L2 inch (mm)	Weight lb. (kg)	DXF
PK296-0□AA PK296-F4.5A	2.60 (66)	—	3.7 (1.7)	B122U
PK296-0□BA PK296-F4.5B		3.94 (100)		
PK299-0□AA PK299-F4.5A	3.78 (96)	—	6.2 (2.8)	B123U
PK299-0□BA PK299-F4.5B		5.12 (130)		
PK2913-0□AA PK2913-F4.0A	4.96 (126)	—	8.4 (3.8)	B124U
PK2913-0□BA PK2913-F4.0B		6.30 (160)		

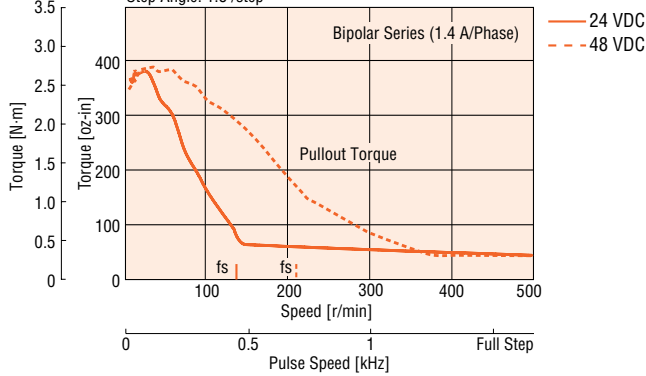
- Enter the winding specification in the box (□) within the model name.

# Speed-Torque Characteristics

How to Read Speed-Torque Characteristics → Page C-10

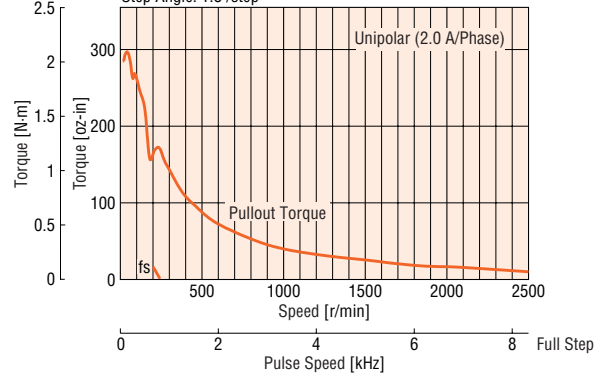
## PK296-01BA Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D9CL-12.7F**:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



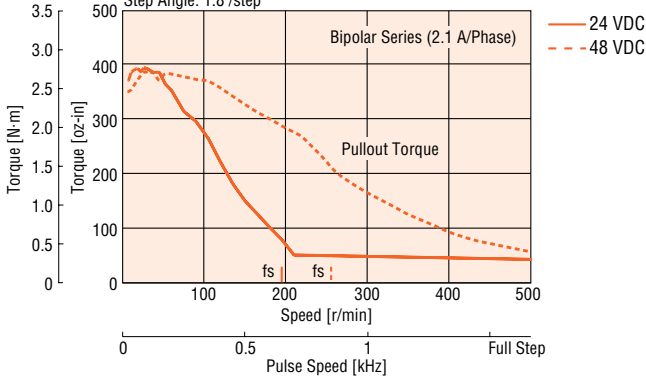
## PK296-01BA Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D9CL-12.7F**:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



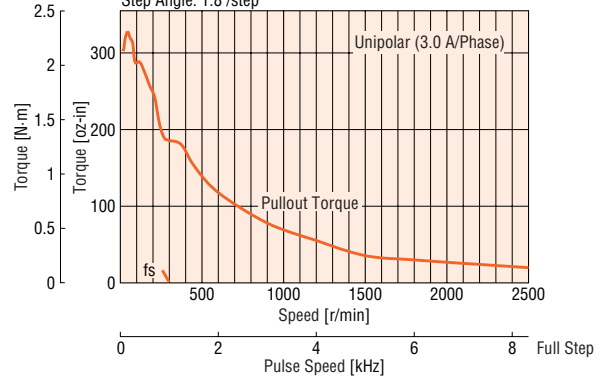
## PK296-02BA Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D9CL-12.7F**:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



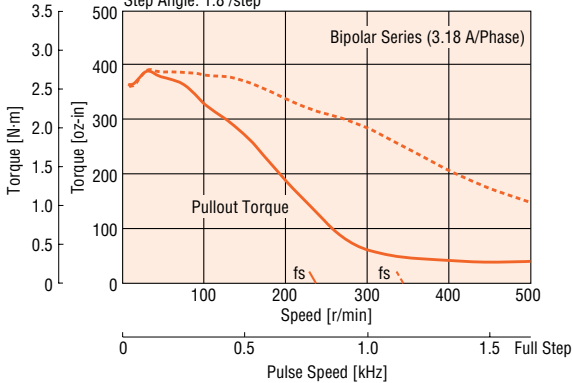
## PK296-02BA Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D9CL-12.7F**:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



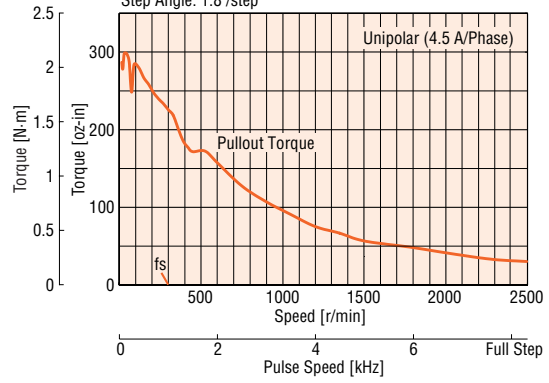
## PK296-03BA Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D9CL-12.7F**:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



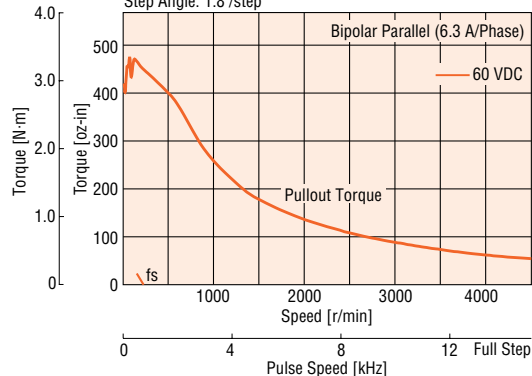
## PK296-03BA Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
With Damper **D9CL-12.7F**:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



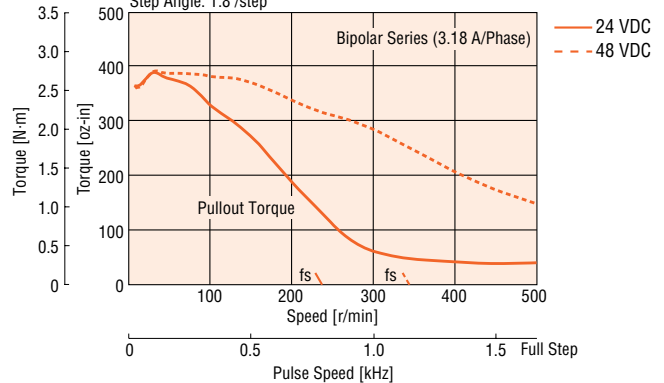
## PK296-F4.5B Bipolar (Parallel)

Power Input: 60 VDC Bipolar Constant Current Driver  
With Damper **D9CL-12.7F**:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



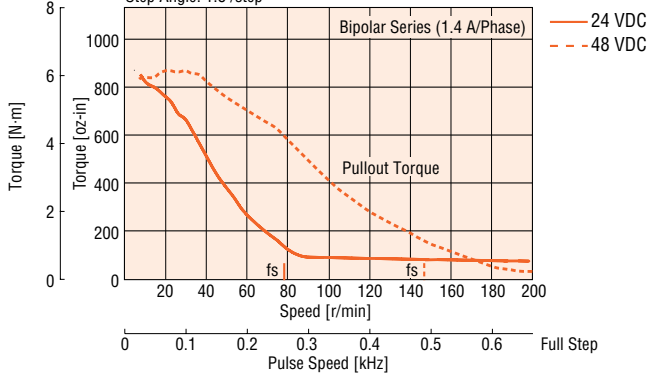
## PK296-F4.5B Bipolar (Series)

Bipolar Constant Current Driver  
With Damper **D9CL-12.7F**:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle: 1.8°/step



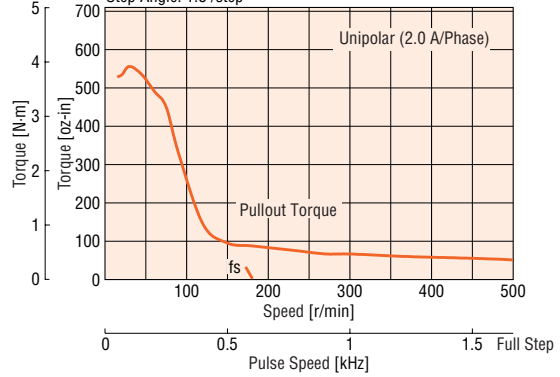
● **PK299-01BA Bipolar (Series)**

Bipolar Constant Current Driver  
 With Damper **D9CL-12.7F**:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle:  $1.8^\circ/\text{step}$



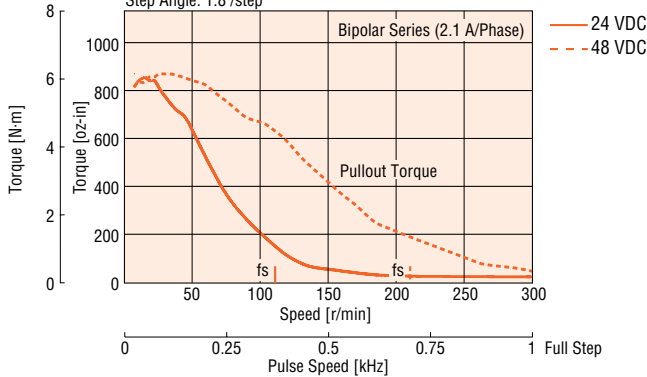
● **PK299-01BA Unipolar**

Power Input: 24 VDC Unipolar Constant Current Driver  
 With Damper **D9CL-12.7F**:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle:  $1.8^\circ/\text{step}$



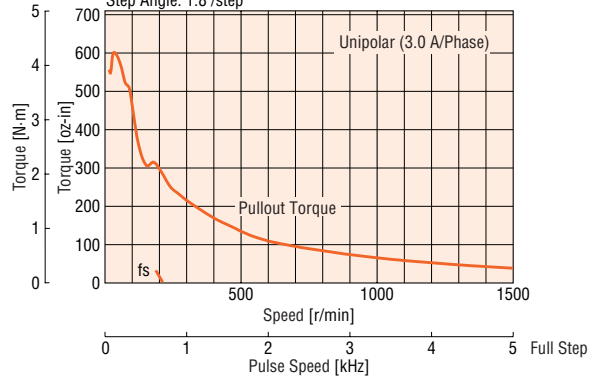
● **PK299-02BA Bipolar (Series)**

Bipolar Constant Current Driver  
 With Damper **D9CL-12.7F**:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle:  $1.8^\circ/\text{step}$



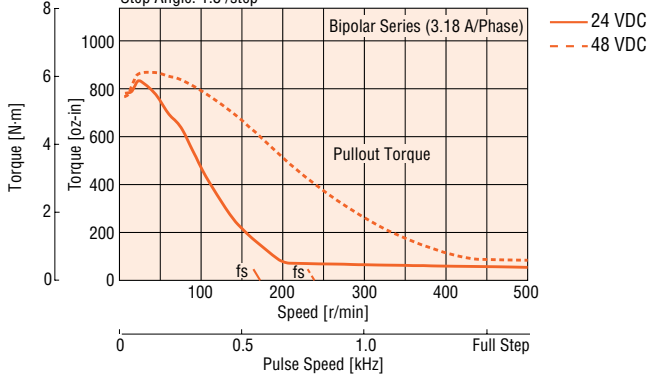
● **PK299-02BA Unipolar**

Power Input: 24 VDC Unipolar Constant Current Driver  
 With Damper **D9CL-12.7F**:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle:  $1.8^\circ/\text{step}$



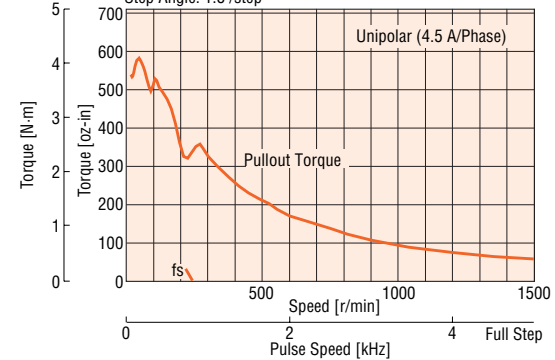
● **PK299-03BA Bipolar (Series)**

Bipolar Constant Current Driver  
 With Damper **D9CL-12.7F**:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle:  $1.8^\circ/\text{step}$



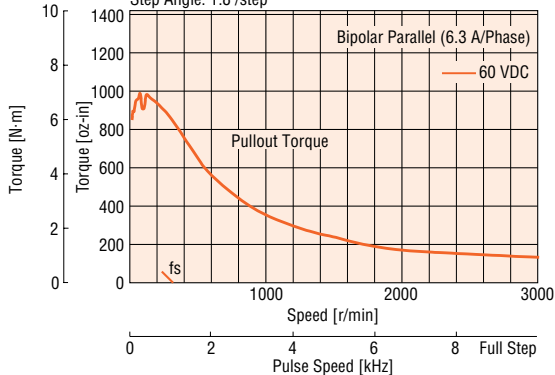
● **PK299-03BA Unipolar**

Power Input: 24 VDC Unipolar Constant Current Driver  
 Load Inertia:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle:  $1.8^\circ/\text{step}$



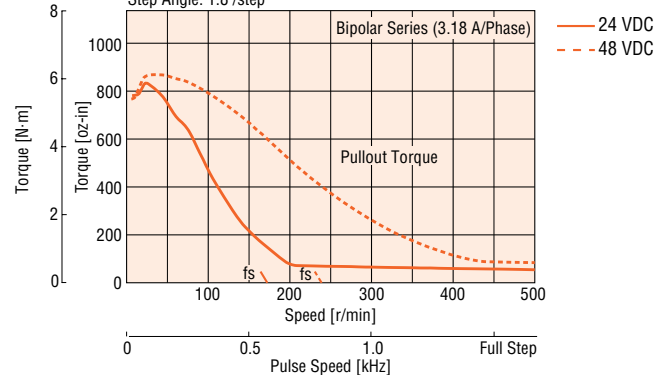
● **PK299-F4.5B Bipolar (Parallel)**

Power Input: 60 VDC Bipolar Constant Current Driver  
 With Damper **D9CL-12.7F**:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle:  $1.8^\circ/\text{step}$



● **PK299-F4.5B Bipolar (Series)**

Bipolar Constant Current Driver  
 With Damper **D9CL-12.7F**:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle:  $1.8^\circ/\text{step}$



Introduction	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor
	AS	AS PLUS	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK	Accessories	Before Using a Stepping Motor

□ 1.10 in. (□ 28 mm)

□ 1.38 in. (□ 35 mm)

□ 1.65 in. (□ 42 mm)

□ 2.22 in. (□ 56.4 mm)

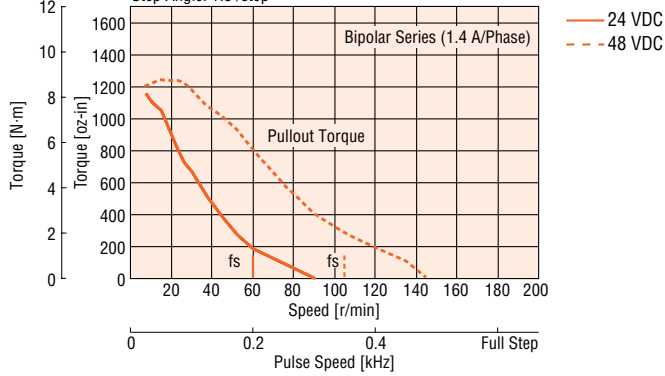
□ 2.36 in. (□ 60 mm)

□ 3.35 in. (□ 85 mm)

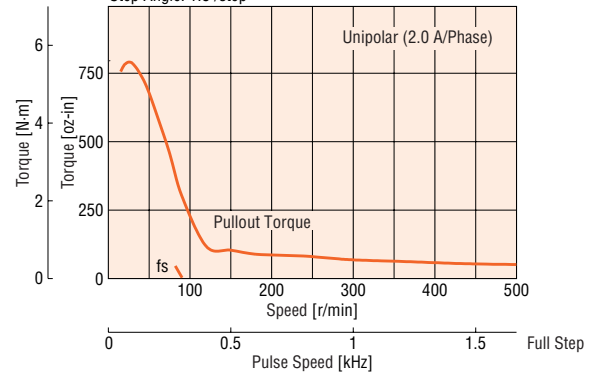
□ 3.54 in. (□ 90 mm)

● **PK2913-01BA** Bipolar (Series)

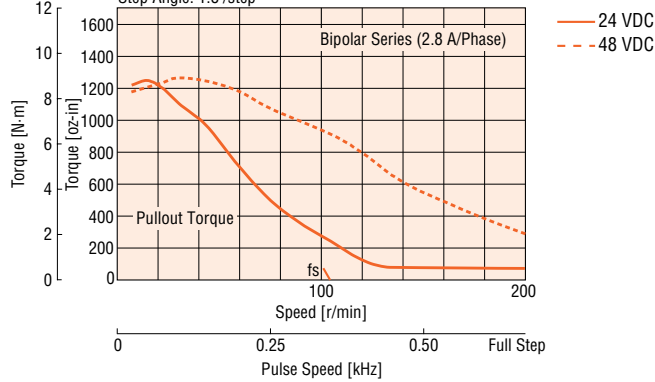
Bipolar Constant Current Driver  
 With Damper **D9CL-12.7F**:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle:  $1.8^\circ/\text{step}$

● **PK2913-01BA** Unipolar

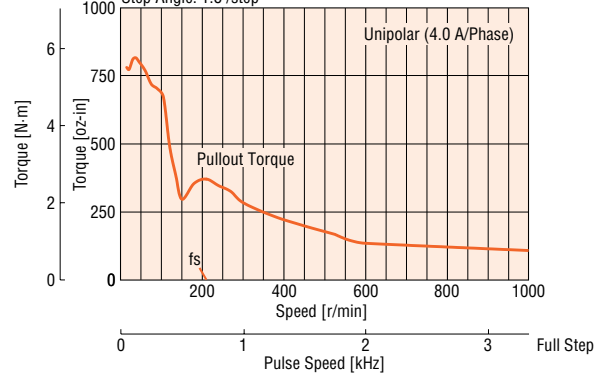
Power Input: 24 VDC Unipolar Constant Current Driver  
 With Damper **D9CL-12.7F**:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle:  $1.8^\circ/\text{step}$

● **PK2913-02BA** Bipolar (Series)

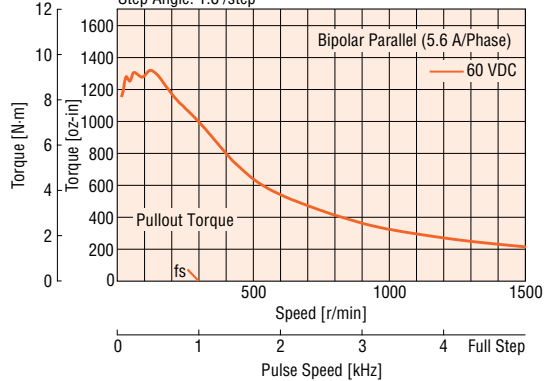
Bipolar Constant Current Driver  
 With Damper **D9CL-12.7F**:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle:  $1.8^\circ/\text{step}$

● **PK2913-02BA** Unipolar

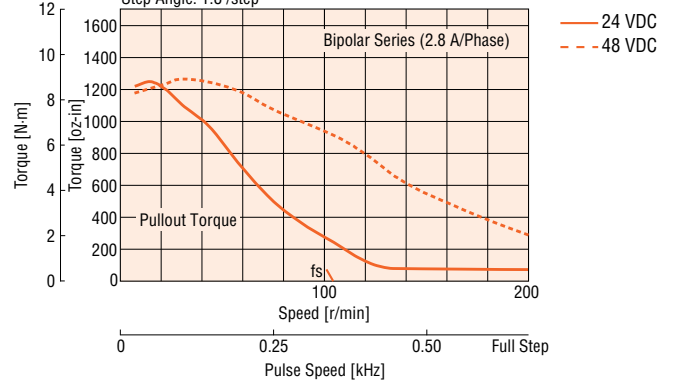
Power Input: 24 VDC Unipolar Constant Current Driver  
 With Damper **D9CL-12.7F**:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle:  $1.8^\circ/\text{step}$

● **PK2913-F4.0B** Bipolar (Parallel)

Power Input: 60 VDC Bipolar Constant Current Driver  
 With Damper **D9CL-12.7F**:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle:  $1.8^\circ/\text{step}$

● **PK2913-F4.0B** Bipolar (Series)

Bipolar Constant Current Driver  
 With Damper **D9CL-12.7F**:  $J_L = 4.8 \text{ oz-in}^2 (870 \times 10^{-7} \text{ kg-m}^2)$   
 Step Angle:  $1.8^\circ/\text{step}$





# □ 3.54 in. (□ 90 mm)

## PK Series SH Geared Type



### Specifications

#### Motor Specifications

Model	Connection Type	Current per Phase A/phase	Voltage VDC	Resistance per Phase Ω/phase	Inductance mH/phase	Rotor Inertia J		Lead Wires
						oz-in <sup>2</sup>	kg-m <sup>2</sup>	
PK296A1A-SG□	Bipolar (Series)	1	4.4	4.4	30.8	7.7	1400×10 <sup>-7</sup>	6
PK296B1A-SG□	Unipolar	1.5	3.3	2.2	7.7			
PK296A2A-SG□	Bipolar (Series)	2.1	2	0.96	6	7.7	1400×10 <sup>-7</sup>	6
PK296B2A-SG□	Unipolar	3	1.4	0.48	1.5			

How to Read Specifications → Page C-9

Motor Wiring Diagrams → Page C-189

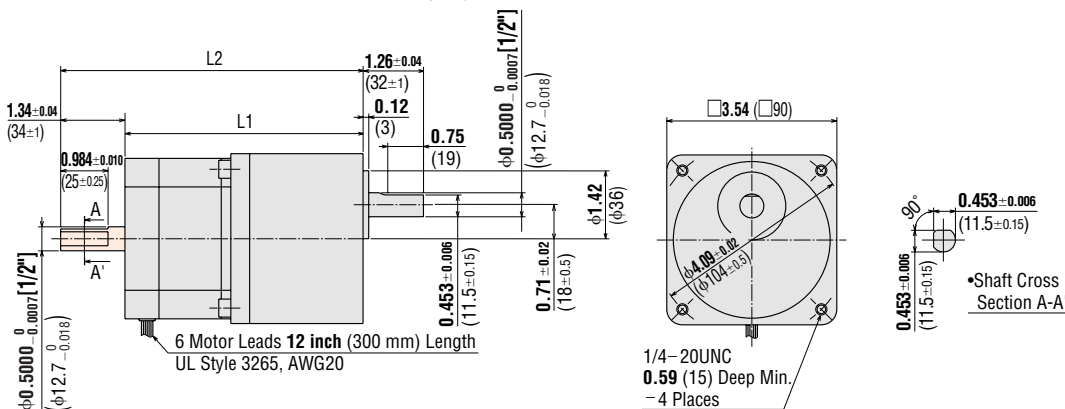
● Enter the gear ratio in the box (□) within the model name.

#### Gearmotor Specifications

Model	Gear Ratio	Holding Torque*		Step Angle	Permissible Speed
		lb-in	N·m		
PK296A1A-SG3.6, PK296A2A-SG3.6 PK296B1A-SG3.6, PK296B2A-SG3.6	3.6:1	22	2.5	0.5°	500
PK296A1A-SG7.2, PK296A2A-SG7.2 PK296B1A-SG7.2, PK296B2A-SG7.2	7.2:1	44	5	0.25°	250
PK296A1A-SG9, PK296A2A-SG9 PK296B1A-SG9, PK296B2A-SG9	9:1	55	6.3	0.2°	200
PK296A1A-SG10, PK296A2A-SG10 PK296B1A-SG10, PK296B2A-SG10	10:1	61	7	0.18°	180
PK296A1A-SG18, PK296A2A-SG18 PK296B1A-SG18, PK296B2A-SG18	18:1	79	9	0.1°	100
PK296A1A-SG36, PK296A2A-SG36 PK296B1A-SG36, PK296B2A-SG36	36:1	106	12	0.05°	50

\* Holding torque is the same regardless of the connection type, due to the permissible torque limit of the gearhead.

#### Dimensions Scale 1/4, Unit = inch (mm)



- Screws (included)  
1/4-20 UNC, 0.75 inch (19 mm) length, 4 pieces
- These dimensions are for double shaft models. For single shaft models, ignore the shaded area.

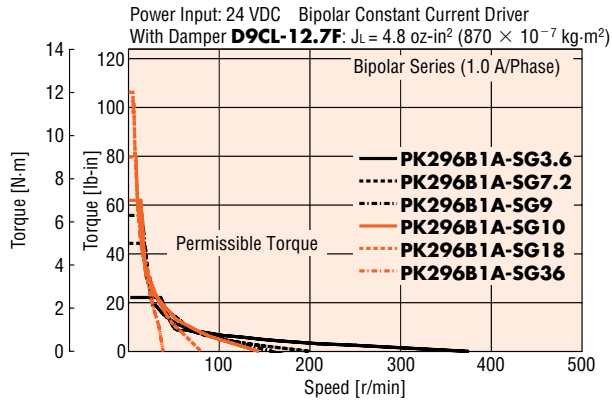
Model	L1 inch (mm)	L2 inch (mm)	Weight lb. (kg)	DXF
PK296A□A-SG□	4.96 (126)	—	6.2 (2.8)	B242U
PK296B□A-SG□		6.3 (160)		

- Enter the winding specification in the box (□) within the model number.
- Enter the gear ratio in the box (□) within the model number.

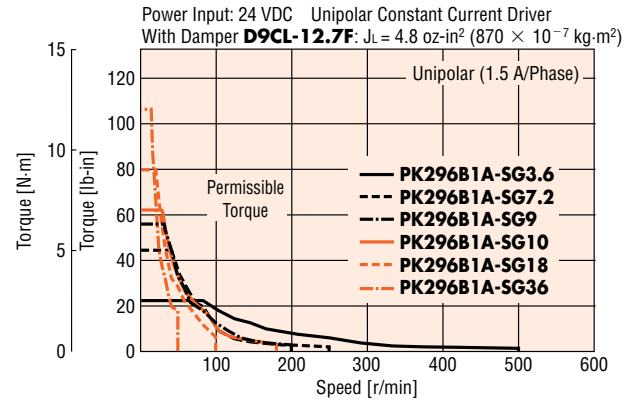
# Speed-Torque Characteristics

How to Read Speed-Torque Characteristics → Page C-10

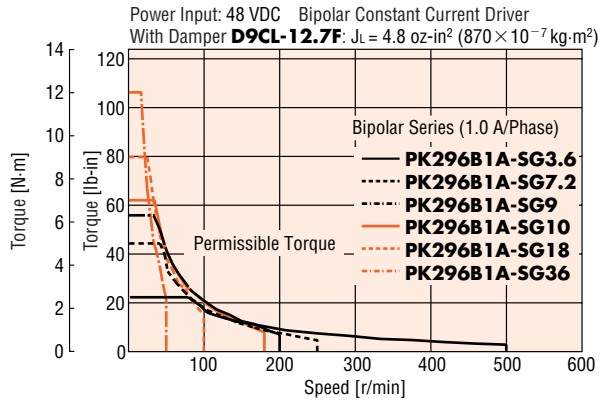
## ● PK296B1A-SG □ Bipolar (Series) 24 VDC



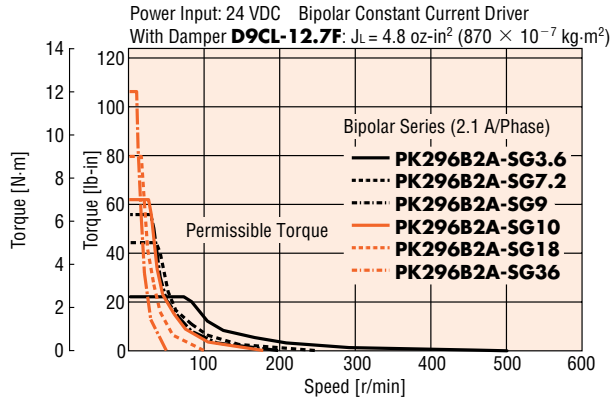
## ● PK296B1A-SG □ Unipolar



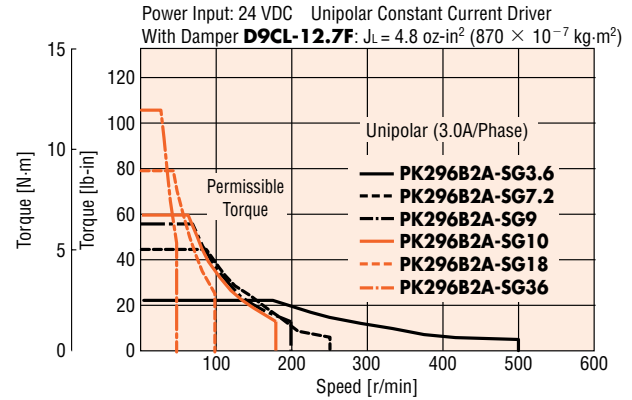
## ● PK296A1B-SG □ Bipolar (Series) 48 VDC



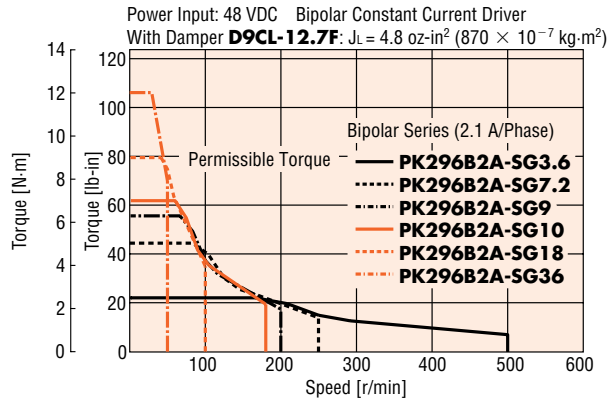
## ● PK296B2A-SG □ Bipolar (Series) 24 VDC



## ● PK296B2A-SG □ Unipolar

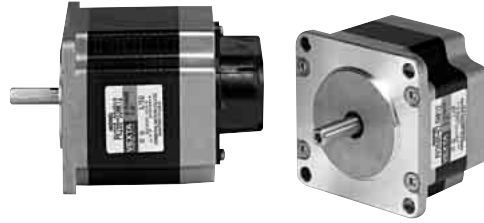


## ● PK296B2A-SG □ Bipolar (Series) 48 VDC



# 2.22 in. (56.4 mm)

## PK Series Standard Type with Encoder

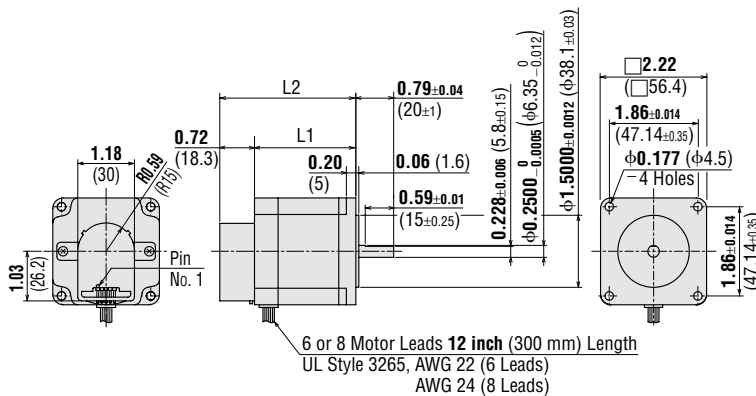


### Specifications

Model Single Shaft	Basic Step Angle	Connection Type	Holding Torque		Current per Phase A/phase	Voltage VDC	Resistance per Phase $\Omega$ /phase	Inductance mH/phase	Rotor Inertia J		Lead Wires
			oz-in	N-m					oz-in <sup>2</sup>	kg-m <sup>2</sup>	
PK264-01AR11 PK264-01AR12	1.8°	Bipolar (Series)	68	0.48	0.71	8.1	11.4	21.6	0.66	120×10 <sup>-7</sup>	6
		Unipolar	55	0.39	1	5.7	5.7	5.4			
PK264-02AR11 PK264-02AR12	1.8°	Bipolar (Series)	68	0.48	1.4	3.9	2.8	5.6	0.66	120×10 <sup>-7</sup>	6
		Unipolar	55	0.39	2	2.8	1.4	1.4			
PK264-03AR11 PK264-03AR12	1.8°	Bipolar (Series)	68	0.48	2.1	2.6	1.26	2.4	0.66	120×10 <sup>-7</sup>	6
		Unipolar	55	0.39	3	1.9	0.63	0.6			
PK264-E2.0AR11 PK264-E2.0AR12	1.8°	Bipolar (Parallel)	68	0.48	2.8	1.96	0.7	1.4	0.66	120×10 <sup>-7</sup>	8
		Bipolar (Series)	68	0.48	1.4	3.9	2.8	5.6			
		Unipolar	55	0.39	2	2.8	1.4	1.4			
PK266-01AR11 PK266-01AR12	1.8°	Bipolar (Series)	166	1.17	0.71	11	14.8	40	1.64	300×10 <sup>-7</sup>	6
		Unipolar	127	0.9	1	7.4	7.4	10			
PK266-02AR11 PK266-02AR12	1.8°	Bipolar (Series)	166	1.17	1.4	5	3.6	10	1.64	300×10 <sup>-7</sup>	6
		Unipolar	127	0.9	2	3.6	1.8	2.5			
PK266-03AR11 PK266-03AR12	1.8°	Bipolar (Series)	166	1.17	2.1	3.2	1.5	4.4	1.64	300×10 <sup>-7</sup>	6
		Unipolar	127	0.9	3	2.3	0.75	1.1			
PK266-E2.0AR11 PK266-E2.0AR12	1.8°	Bipolar (Parallel)	166	1.17	2.8	2.52	0.9	2.5	1.64	300×10 <sup>-7</sup>	8
		Bipolar (Series)	166	1.17	1.4	5	3.6	10			
		Unipolar	127	0.9	2	3.6	1.8	2.5			

How to Read Specifications → Page C-9  
Motor Wiring Diagrams → Page C-189

### Dimensions Scale 1/4, Unit = inch (mm)



Model	L1 inch (mm)	L2 inch (mm)	Weight lb. (kg)	DXF
PK264-0□AR11 PK264-0□AR12	1.54 (39)	2.26 (57.3)	1.03 (0.47)	B808U
PK264-E2.0AR11 PK264-E2.0AR12				
PK266-0□AR11 PK266-0□AR12	2.13 (54)	2.85 (72.3)	1.58 (0.72)	B809U
PK266-E2.0AR11 PK266-E2.0AR12				

Enter the winding specification in the box (□) within the model number.

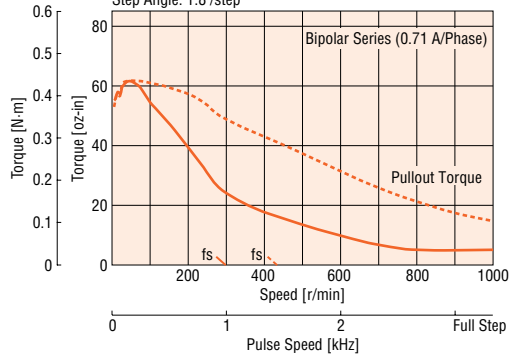
### Encoder Specifications → Page C-239

## Speed-Torque Characteristics

How to Read Speed-Torque Characteristics → Page C-10

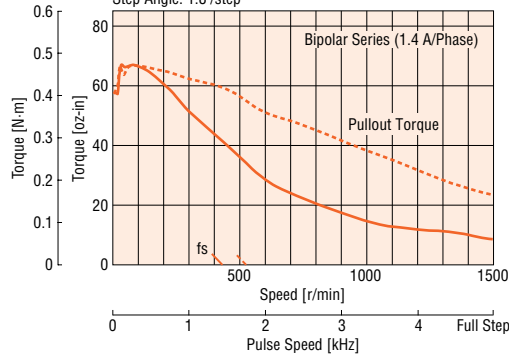
### PK264-01AR11 PK264-01AR12 Bipolar (Series)

Bipolar Constant Current Driver  
Load Inertia:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$



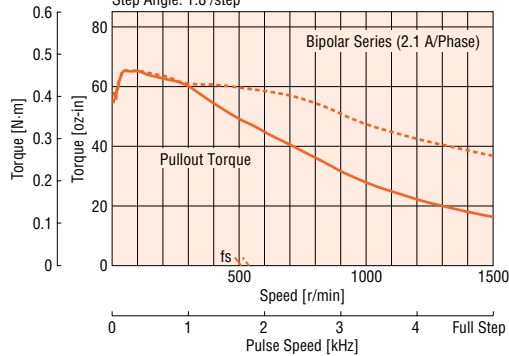
### PK264-02AR11 PK264-02AR12 Bipolar (Series)

Bipolar Constant Current Driver  
Load Inertia:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$



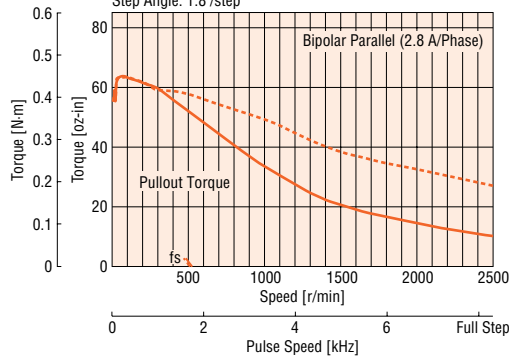
### PK264-03AR11 PK264-03AR12 Bipolar (Series)

Bipolar Constant Current Driver  
Load Inertia:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$



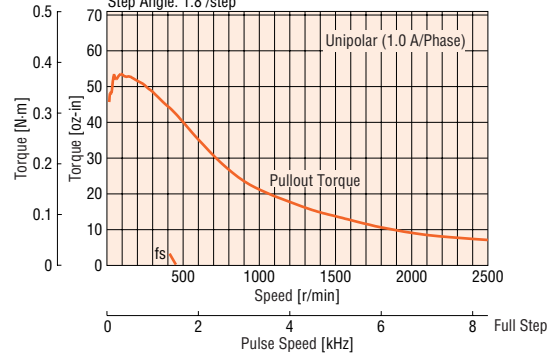
### PK264-E2.0AR11 PK264-E2.0AR12 Bipolar (Parallel)

Bipolar Constant Current Driver  
Load Inertia:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$



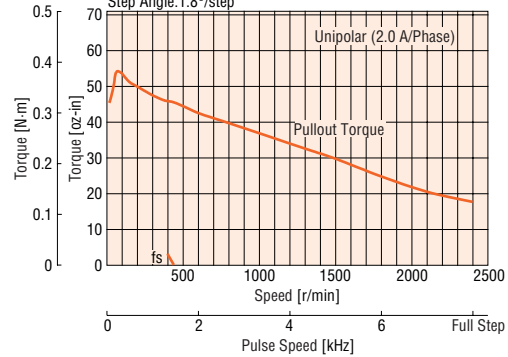
### PK264-01AR11 PK264-01AR12 Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
Load Inertia:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$



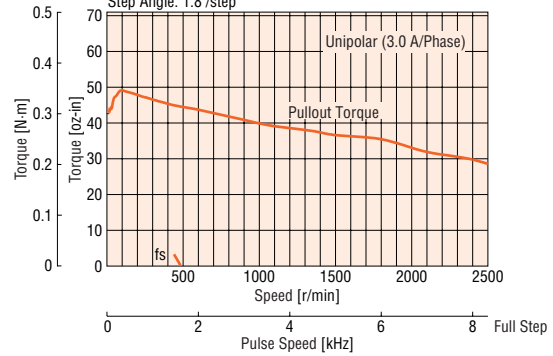
### PK264-02AR11 PK264-02AR12 Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
Load Inertia:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$



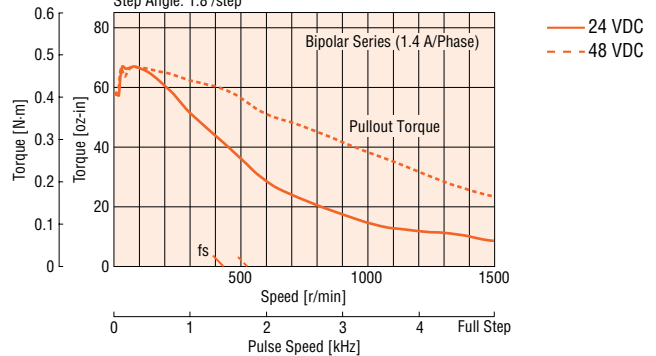
### PK264-03AR11 PK264-03AR12 Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
Load Inertia:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$



### PK264-E2.0AR11 PK264-E2.0AR12 Bipolar (Series)

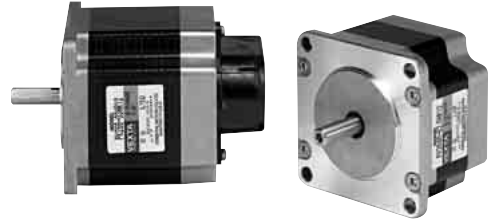
Bipolar Constant Current Driver  
Load Inertia:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $1.8^\circ/\text{step}$





# □ 2.22 in. (□ 56.4 mm)

## PK Series High Resolution Type with Encoder

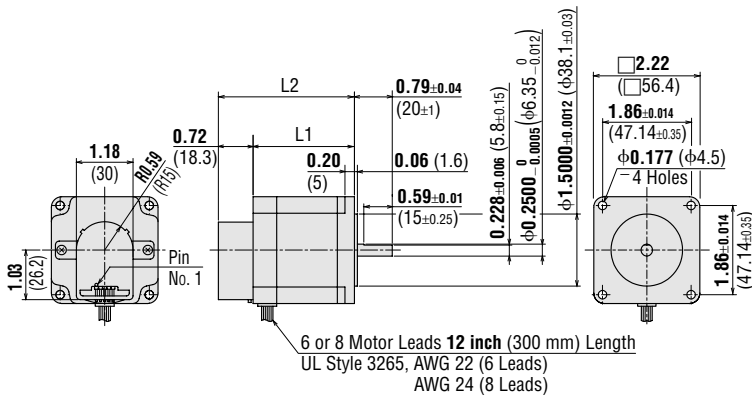


### Specifications

Model Single Shaft	Basic Step Angle	Connection Type	Holding Torque		Current per Phase A/phase	Voltage VDC	Resistance per Phase Ω/phase	Inductance mH/phase	Rotor Inertia J		Lead Wires
			oz-in	N-m					oz-in <sup>2</sup>	kg-m <sup>2</sup>	
<b>PK264M-01AR11</b> <b>PK264M-01AR12</b>	0.9°	Bipolar (Series)	68	0.48	0.71	8.1	11.4	26	0.66	120×10 <sup>-7</sup>	6
		Unipolar	55	0.39	1	5.7	5.7	6.5			
<b>PK264M-02AR11</b> <b>PK264M-02AR12</b>	0.9°	Bipolar (Series)	68	0.48	1.4	3.9	2.8	6.8	0.66	120×10 <sup>-7</sup>	6
		Unipolar	55	0.39	2	2.8	1.4	1.7			
<b>PK264M-03AR11</b> <b>PK264M-03AR12</b>	0.9°	Bipolar (Series)	68	0.48	2.1	2.6	1.26	3	0.66	120×10 <sup>-7</sup>	6
		Unipolar	55	0.39	3	1.9	0.63	0.75			
<b>PK264M-E2.0AR11</b> <b>PK264M-E2.0AR12</b>	0.9°	Bipolar (Parallel)	68	0.48	2.8	1.96	0.7	1.7	0.66	120×10 <sup>-7</sup>	8
		Bipolar (Series)	68	0.48	1.4	3.9	2.8	6.8			
		Unipolar	55	0.39	2	2.8	1.4	1.7			
<b>PK266M-01AR11</b> <b>PK266M-01AR12</b>	0.9°	Bipolar (Series)	166	1.17	0.71	11	14.8	50.8	1.64	300×10 <sup>-7</sup>	6
		Unipolar	127	0.9	1	7.4	7.4	12.7			
<b>PK266M-02AR11</b> <b>PK266M-02AR12</b>	0.9°	Bipolar (Series)	166	1.17	1.4	5	3.6	12.8	1.64	300×10 <sup>-7</sup>	6
		Unipolar	127	0.9	2	3.6	1.8	3.2			
<b>PK266M-03AR11</b> <b>PK266M-03AR12</b>	0.9°	Bipolar (Series)	166	1.17	2.1	3.2	1.5	5.8	1.64	300×10 <sup>-7</sup>	6
		Unipolar	127	0.9	3	2.3	0.75	1.45			
<b>PK266M-E2.0AR11</b> <b>PK266M-E2.0AR12</b>	0.9°	Bipolar (Parallel)	166	1.17	2.8	2.52	0.9	3.2	1.64	300×10 <sup>-7</sup>	8
		Bipolar (Series)	166	1.17	1.4	5	3.6	12.8			
		Unipolar	127	0.9	2	3.6	1.8	3.2			

How to Read Specifications → Page C-9  
Motor Wiring Diagrams → Page C-189

### Dimensions Scale 1/4, Unit = inch (mm)



Model	L1 inch (mm)	L2 inch (mm)	Weight lb. (kg)	DXF
<b>PK264M-0□AR11</b> <b>PK264M-0□AR12</b>	1.54 (39)	2.26 (57.3)	1.03 (0.47)	B808U
<b>PK264M-E2.0AR11</b> <b>PK264M-E2.0AR12</b>				
<b>PK266M-0□AR11</b> <b>PK266M-0□AR12</b>	2.13 (54)	2.85 (72.3)	1.58 (0.72)	B809U
<b>PK266M-E2.0AR11</b> <b>PK266M-E2.0AR12</b>				

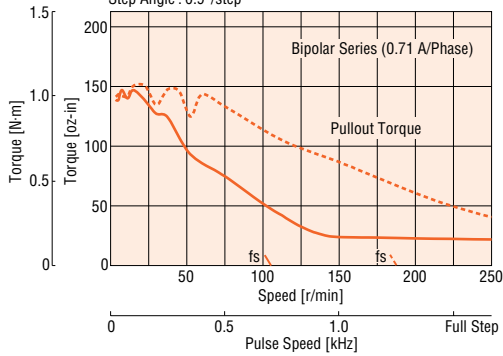
• Enter the winding specification in the box (□) within the model number.

### Encoder Specifications → Page C-239



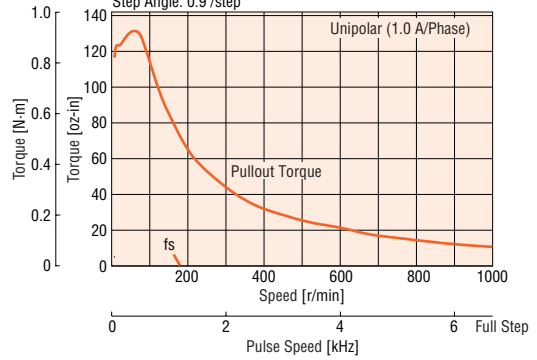
**PK266M-01AR11**  
**PK266M-01AR12** Bipolar (Series)

Bipolar Constant Current Driver  
Load Inertia:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



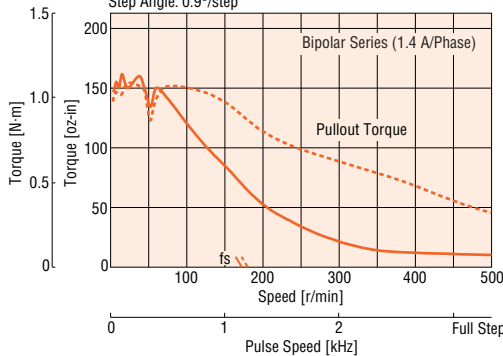
**PK266M-01AR11**  
**PK266M-01AR12** Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
Load Inertia:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



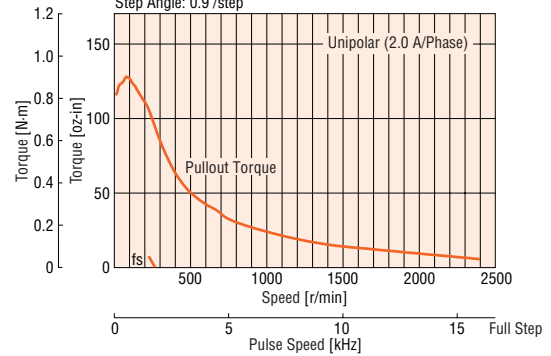
**PK266M-02AR11**  
**PK266M-02AR12** Bipolar (Series)

Bipolar Constant Current Driver  
Load Inertia:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



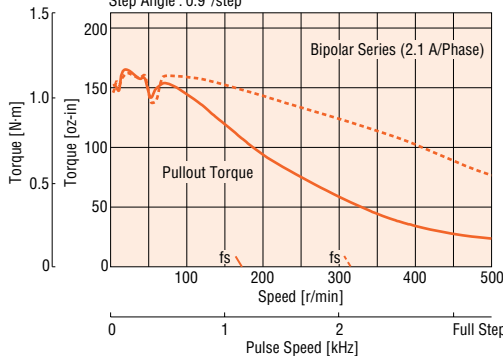
**PK266M-02AR11**  
**PK266M-02AR12** Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
Load Inertia:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



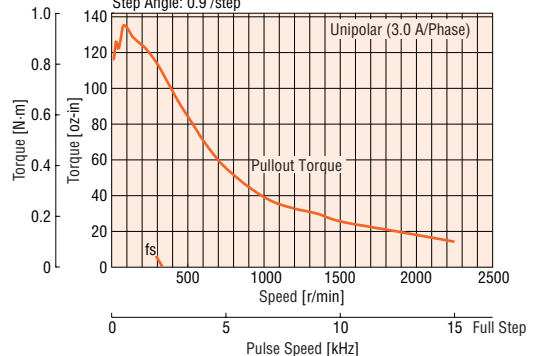
**PK266M-03AR11**  
**PK266M-03AR12** Bipolar (Series)

Bipolar Constant Current Driver  
Load Inertia:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



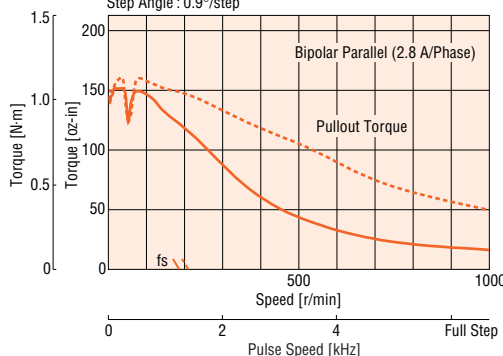
**PK266M-03AR11**  
**PK266M-03AR12** Unipolar

Power Input: 24 VDC Unipolar Constant Current Driver  
Load Inertia:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



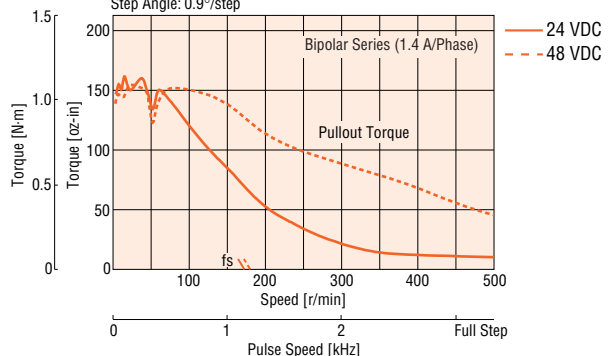
**PK266M-E2.0AR11**  
**PK266M-E2.0AR12** Bipolar (Parallel)

Bipolar Constant Current Driver  
Load Inertia:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$



**PK266M-E2.0AR11**  
**PK266M-E2.0AR12** Bipolar (Series)

Bipolar Constant Current Driver  
Load Inertia:  $J_L = 0.77 \text{ oz-in}^2 (140 \times 10^{-7} \text{ kg-m}^2)$   
Step Angle:  $0.9^\circ/\text{step}$





## Encoder Specifications

### Note:

- Use the motor within the encoder specifications.  
HEDS-5600 series encoders by Agilent Technologies, Inc. are used.

### Recommended Operating Ranges

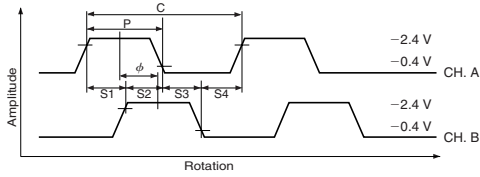
Item	Symbol	Min	TYP.	MAX.	Note
Supplied Voltage	Vcc	4.5 V	5.0 V	5.5 V	Ripple<100 mVp-p
Load Capacity	Cl	—	—	100 pF	2.7 $\Omega$ , pull-up
Response Frequency	f	—	—	100 kHz	Rotating speed (r/min) $\times(N/60)$

N=Encoder Resolution

### Note:

- The encoder specifications are designed to guarantee operation based on a response frequency of 100 kHz. However, the encoder can be operated at a minimum response frequency of 100 kHz.

### Output Waveform



### Encoder Characteristics

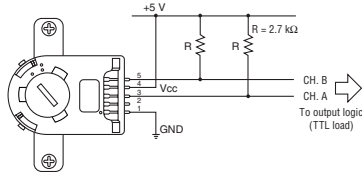
Unless otherwise specified, the following characteristics assume that the encoder is installed within the allowable ranges of error and operated under the recommended operating conditions. Each characteristic value indicates the worst value within one rotation of the code wheel.

Item	Symbol	TYP.*	Max.
Pulse-width error	$\Delta P$	7°e	45°e
Logic-width error	$\Delta S$	5°e	45°e
Phase error	$\Delta\phi$	2°e	20°e
Position error	$\Delta\theta$	10 arc min.	40 arc min.
Cycle error	$\Delta C$	3°e	5.5°e

\* TYP values are based on Vcc = 5.0 V and TA = 77°F (25°C).

### Encoder Electrical Interface

We recommend that the CH.A and CH.B outputs be pulled up with a resistance of 2.7 k $\Omega$  ( $\pm 10\%$ ) in order to shorten the rise time of the output pulse. Install the pull-up resistor near the encoder [within 6.6 feet (1 m)].



Pull-up of Encoder Output

### Applicable Connectors

Manufacturer	Model Numbers
AMP®	103975-4
	640442-5
DUPONT®	65039-032 (housing)
	4825X-000 (contact)
Agilent Technologies®	HEDS-8902 (for 2 channels: 4 lead wires)
MOLEX®	2695 series (housing)
	2759 series (contact)

Introduction

AS

AS PLUS

ASC

DC Input

AC Input

RK

CRK II

CSK

PMC

DC Input

AC Input

UMK

DC Input

CSK

Encoder

Encoder

PK/PV

PK

with Indexer

Driver

with Indeter

EMP401

EMP402

SG8030J

SMK

Low-Speed Synchronous Motors

Accessories

Before Using a Stepping Motor

## General Specifications

Item	Specifications
Shaft Runout	0.002 inch (0.05 mm) T.I.R at top of output shaft *1
Perpendicularity	0.003 inch (0.075 mm) T.I.R *1
Concentricity	0.003 inch (0.075 mm) T.I.R *1
Shaft Radial Play *2	0.001 inch (0.025 mm) max. of 1.12 lb. (5 N)
Shaft Axial Play *3	0.003 inch (0.075 mm) max. of 2.2 lb. (10 N)
Step Accuracy *4	<b>PK Series:</b> ±3 arc min. (±0.05°) <b>PV Series:</b> ±2 arc min. (±0.034°)
Insulation Resistance	100 MΩ minimum under normal temperature and humidity, when measured by a 500 VDC megger between the motor coils and the motor casing.
Dielectric Strength *5	Sufficient to withstand 1.0 kV, 60 Hz applied between the motor coils and casing for one minute, under normal ambient temperature and humidity.
Insulation Class	Class B [266°F (130°C)]
Temperature Rise	Temperature rise of the coil measured by the Change Resistance Method is 144°F (80°F) or less. (at standstill, two phases energized)
Ambient Humidity Range	85% or less
Ambient Temperature Range	14°F (-10°C)~122°F (+50°C)

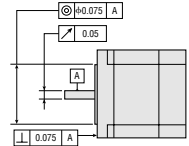
\*1 T.I.R. (Total Indicator Reading): Refers to the total dial gauge reading when the measurement section is rotated one revolution centered on the reference axis center.

\*2 Radial Play: Refers to the displacement in shaft position in the radial direction, when a 1.12 lb. (5 N) load is applied in the radial direction to the motor shaft tip.

\*3 Axial Play: Refers to the displacement in shaft position in the axial direction, when a 2.2 lb. (10 N) load is applied to the motor shaft in the axial direction.

\*4 This value is for full step with no load. (The value changes with size of load.)

\*5 For motors with a frame size of 1.65 inch sq. (42 mm sq.) or less, 60 Hz, 0.5 kV for 1 minute.



## Permissible Overhung Load and Permissible Thrust Load

Unit = Upper values: lb./Lower values: N

Type	Model	Overhung Load Distance from Shaft End [inch (mm)]					Thrust Load
		0	0.2 (5)	0.39 (10)	0.59 (15)	0.79 (20)	
PK Series High Torque Type	<b>PK223P</b> <b>PK224P</b> <b>PK225P</b>	5.6 25	7.6 34	11.7 52	—	—	The permissible thrust load [lb. (N)] shall be no greater than the motor mass.
	<b>PK233P, PK235P</b>	4.5 20	5.6 25	7.6 34	11.7 52	—	
	<b>PK244P, PK246P</b>	4.5 20	5.6 25	7.6 34	11.7 52	—	
PK Series Standard Type	<b>PK243</b> <b>PK244</b> <b>PK245</b>	4.5 20	5.6 25	7.6 34	11.7 52	—	
	<b>PK264</b> <b>PK264-AR11</b> <b>PK264-AR12</b> <b>PK266</b> <b>PK266-AR11</b> <b>PK266-AR12</b> <b>PK268</b>	12.1 54	15 67	20 89	29 130	—	
	<b>PK296</b> <b>PK299</b> <b>PK2913</b>	58 260	65 290	76 340	87 390	108 480	
	<b>PV Series</b>	<b>PV264, PV266</b> <b>PV267, PV269</b>	11.2 50	13.5 60	16.8 75	22 100	
PK Series High Resolution Type	<b>PK243M</b> <b>PK244M</b> <b>PK245M</b>	4.5 20	5.6 25	7.6 34	11.7 52	—	
	<b>PK264M</b> <b>PK264M-AR11</b> <b>PK264M-AR12</b> <b>PK266M</b> <b>PK266M-AR11</b> <b>PK266M-AR12</b> <b>PK268M</b>	12.1 54	15 67	20 89	29 130	—	
PK Series <b>SH</b> Geared Type	<b>PK223-SG</b> □	3.3 15	3.8 17	4.5 20	5.1 23	—	
	<b>PK243-SG</b> □	2.2 10	3.3 15	4.5 20	6.7 30	—	3.3 15
	<b>PK264-SG3.6</b> <b>PK264-SG7.2</b> <b>PK264-SG9</b> <b>PK264-SG10</b>	6.7 30	9 40	11.2 50	13.5 60	15.7 70	6.7 30
	<b>PK264-SG18</b> <b>PK264-SG36</b> <b>PK264-SG50</b> <b>PK264-SG100</b>	18 80	22 100	27 120	31 140	36 160	—
	<b>PK296-SG</b> □	49 220	56 250	67 300	78 350	90 400	22 100